U.S. Coast and Geodetic Survey
Military and naval service of the United States Coast Survey 1861-1865

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U.S. Coast and Geodetic Survey

No. 37

DEPARTMENT OF COMMERCE

MILITARY AND NAVAL SERVICE

OF THE

UNITED STATES COAST SURVEY

1861-1865

COMPILED FROM OFFICIAL RECORDS
AND PUBLISHED BY THE
U. S. COAST AND GEODETIC SURVEY
E. LESTER JONES, Superintendent

SPECIAL PUBLICATION No. 37

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MILITARY AND NAVAL SERVICE OF THE UNITED STATES COAST SURVEY, 1861–1865.

INTRODUCTION.

The United States Coast and Geodetic Survey has a long and honorable record in the service of the country, and it has been decided to publish a compilation from official records to call attention to this important auxiliary to the Army and Navy in time of war. The importance of such a civil bureau in time of national peril is not easily recognized by those who have only known its work in connection with the commercial development of the Nation.

There is no question of the need of its work in safeguarding life and property at all times, but the fact that it is in a constant state of preparedness and available for instant efficient service in defense of the country is not so apparent.

A perusal of the following pages should convince anyone that during the Civil War the officers of this service did their part on every occasion, when given an opportunity, in preserving the Union.

The compilation could have been extended, but only a sufficient number of extracts have been used to show the scope of the work which the service is at all times ready to undertake in national defense.

The testimony of distinguished military and naval leaders and others high in the councils of the Nation indicates the importance and value of the service rendered.

It is a matter of record that the Superintendent declined to allow the corps to be merged into the Army and Navy, because he wished to preserve its efficient organization to continue the work of surveying the coast at the close of the war, and thus the officers failed to receive the recognition their hazardous duty deserved, which has been justly accorded to others for military service.

It is worthy of note that several of the officers resigned to accept commissions in the Army, and that some of them returned to their former positions in the service at the end of war.

EXTRACTS FROM A PAPER PREPARED IN 1865 AND PUBLISHED IN THE "UNITED STATES SERVICE MAGAZINE," VOLUMES III AND IV, JUNE AND JULY, 1865.

WHAT THE COAST SURVEY HAS DONE FOR THE WAR.

* * * * * * *

The rebellion came, and the Coast Survey, and, indeed, all other public interests, dwindled into insignificance before the vital one attached to the restoration of the integrity of the Republic. There were comparatively few who were aware that the Coast Survey could aid the Government in its efforts to suppress the

rebellion. Yet the Survey has never rendered to the country more important service than that performed since the commencement of the war. Independently of the vast amount of information which it put into the possession of the Army and Navy, when the country was forced to the arbitrament of arms, it has never ceased to take an active part in connection with actual hostilities.

It is not within the scope of these papers to give a history of all the various means by which the Coast Survey has aided the military authorities. This would require far more space than the narrow limits within which they are necessarily confined. Were it possible to do otherwise, the account would prove a mass of dry details, as uninteresting in comparison with active movements, as the daily drill and camp routine of an army are to the hostile shock upon the day of battle. For these reasons, it is intended to descant only upon those services which are indissolubly linked with some grand operation of the war.

All of the military surveys executed have been valuable to the commanders of our land and naval forces; but an account of all, forms no legitimate part of a narrative intended for the general reader. Had a battle or a bombardment happened along every league of the coast which the rebels attempted to wrest from the United States, the labors of the Survey in each place would not have failed to become manifest.

We cannot overestimate the value of the operations undertaken with special reference to military and naval movements—reconnoissance, sounding, buoying, piloting—that have aided our armies and fleets. Some of these labors must, of course, forever remain in comparative obscurity, for their full value could be brought to light only in the progress of military enterprise. But, whenever movements have taken place upon land or sea, the material aid derived from these labors has awakened the admiration of both Army and Navy, and they have rivalled each other in avowing their indebtedness, and in awarding unqualified praise.

The people, also, will appreciate these services, which, however humble they may appear when contrasted with the vast operations to which they contributed, have proved largely conducive to the brilliant achievements of our arms. The most acceptable form which this account can take for the public, will be a recital of the general services rendered by the Coast Survey in the field, but more particularly of those in which it enacted a conspicuous part in the battles of the war.

* * * * * * *

The spring of 1861 saw almost all of the officers of the Coast Survey engaged on duty in the Northern States, either in continuing the regular surveys, or in aiding the Government wherever their services were available within the field of military operations. The new exigencies of the Government found them conversant with duties which they were needed to perform. The Engineers and the Topographical Engineers,[1] two corps of the regular Army, had been created with reference to the scale upon which the old Army was based. They were now numerically insufficient for the performance of all the duties of reconnoissance, surveying, etc., devolving upon the immense forces in the field. Besides, they were needed more especially for the duties of military engineering, and some were withdrawn from these by the attainment of high command. Thus, they were soon absorbed by the demands of a service to which all that the Nation had previously experienced of war was like playing soldiers. It was under these circumstances that the Coast Survey soon proved its usefulness.

Relative to the state of affairs on that work, in the spring of 1861, the Superintendent, in his Report for the year, said:

> The call for the services of the officers of the Army and Navy being imperious, the operations, generally, have been executed by civilians. The advantages of the organization of the work, which have often been stated, were never so fully displayed as in this exigency. The regular work was carried on systematically, though upon a reduced scale. The Navy found on its roll, officers who had knowledge of the harbors and coasts, from service on the survey. To the army list were returned officers skilled in reconnoissance, and in the other various operations of the survey, and familiar with the coast and its shore-lines. The vessels of the survey, both steam and sail vessels, were ready in the emergency for the revenue and naval services, and were freely yielded to their use.
>
> The material in the Coast Survey office was rapidly put in the shape of hydrographic notes, and, by lithographic and photographic processes, the unpublished maps and charts, and memoirs of the coast, were placed at the disposal of the departments of the Government, and of the officers engaged in consultations in regard to, or the executions of, operations along the coast.

[1] These two corps have since been merged into one, called the Corps of Engineers.

In the year 1860, there had been twelve officers of the Army, and eleven officers of the Navy, serving on the Coast Survey. Of these, in 1861, eleven were detached from the work, and eight resigned. Two officers of the Army and two of the Navy remained temporarily. Of the civilians of the Survey, only seven were recreant to duty. All the rest proved their devotion to the Union.

One officer of the Survey accepted a colonelcy on the staff of Major-General Halleck, which position he still occupies, having accompanied General Halleck to the various military departments in which he has been engaged since the beginning of the war. Another officer of the Survey accepted the lieutenant-colonelcy of the 24th Ohio Regiment, and afterwards became colonel of the 44th Ohio Regiment. It was he, who, when commanding at Lexington, Ky., notified the disloyal convention there assembled, that it might consider itself dissolved. Another officer became assistant quartermaster in the Army. He is now in charge of ocean transportation for the Army.

When the rebellion broke out, one of the assistants on the Coast Survey happened to be in Virginia with his family. Cut off from communication with the office, he was not only without his usual means of support, but, at the same time, exposed to solicitations to join the insurgents. Although in such a strait, he repelled the offers which were made to him, and managed to maintain himself and his family by keeping store in Brentsville, Va., where he was found when our lines were extended to that town. He immediately submitted to the Government proof of his loyalty, and delivered the maps which he had secreted during the time that he was liable to be plundered of them. Since that time he has been constantly engaged, with the rank of captain, in making surveys for the Corps of Engineers.

The only person on the Coast Survey, who, upon the breaking out of hostilities, was so unfortunate as to fall into the hands of the insurgents, was a tidal observer, stationed at Calcasieu Entrance, Louisiana. About the beginning of April, 1861, he was questioned in regard to the nature of his occupation, and having satisfied his interrogators as to its harmlessness, he was allowed to continue his duties until the 11th of July, at which time he was arrested, in consequence of an order dispatched from New Orleans. At first, it was intended to try him as a spy, at Lake Charles City; and he was confined there until the 15th of August, when a detachment of soldiers sent from New Orleans carried him to that city as a prisoner of war. He was finally brought before the military commander, General Twiggs, who silenced his explanations by personal abuse, remanded him to prison, and ordered his trial as a spy. He was first sent to the common "lock-up," and then, after an examination by a recorder, he was placed in the parish prison, subject to the order of the military commander. In that place of confinement he spent three months, and at last obtained his release through the interposition of the British consul. He immediately left New Orleans, and reported in person at Washington, where he gave an account, from which these statements are taken.

In May, 1861, a hydrographic reconnoissance of the Potomac, between Blakistone Island and Georgetown, D. C., was executed by the Coast Survey. The results of the reconnoissance were immediately plotted and furnished to the military and naval authorities.

In the first week of June, a topographical and hydrographical reconnoissance was made at White House Point, Mathias Point, and Lower Cedar Point. The results of the reconnoissance were immediately furnished to the Government.

By request of Lieutenant-General Scott, arrangements were at the same time effected to make a detailed survey of the ground occupied by Brigadier-General (now Major-General) McDowell's army, and of the country to the north and west of his pickets, in the direction of Fairfax Court-House, including the Upper Potomac, as far as the point known as the Chain Bridge.[1] As the survey progressed, tracings of it were furnished to Generals McDowell and Tyler, and to Colonel (now General) Heintzelman. The two Corps of Engineers were also supplied with copies. Subsequently, the survey was photographed, and placed at the disposal of the officers for whose purposes it had been ordered.

In the middle of August, at the request of Major-General McClellan, the northwestern approaches of the city of Washington were surveyed. In October, the surveys were extended toward the northward and westward, from Fall's Church and the Chain Bridge.

Early in November, the topography of the Potomac was executed from below Alexandria to Mount Vernon, and from the southern shore of the Potomac to within three miles of Fairfax Court-House.

[1] That bridge has long been superseded by another kind of structure.

These surveys, in the aggregate, embraced two hundred and twenty-three square miles.

After the month of August, the parties engaged in these operations were under the general direction of Lieutenant-Colonel Macomb, Topographical Engineer-in-Chief of the Army of the Potomac.

In the Report of Major-General McClellan, where he refers to the Peninsular Campaign, after enumerating certain officers of the Topographical Engineers, he says:—

> This number, being the greatest available, was so small, that much of the duty of the department devolved upon parties furnished by Professor Bache, Superintendent of the Coast Survey, and other gentlemen from civil life.

Towards the last of August, two ships, the Express and Orizimba, were seized in Maine, by a Coast Survey party on board of the Arago. This vessel was engaged in hydrography on the coast of Maine, and the seizure alluded to was executed under the authority of the Collector of Customs at Eastport, Maine. In September, the Arago, which, by request of the same collector, was cruising in the Bay of Fundy, captured the ship Alice Ball, of New Orleans.

While reconnoissances and surveys were in progress within the theatre of active military operations, other reconnoissances and surveys, for military purposes, were executed in places more remote. The Delaware, opposite Philadelphia, was surveyed, and also near Fort Mifflin and Fort Delaware. Military surveys were executed in Accomac and Northampton Counties, Virginia. In fact, wherever a prospective need of defence called for information which the Coast Survey could provide, or wherever a military movement demanded the aid which it alone had the power to give, there the Coast Survey was found.

To facilitate the operations of blockading squadrons, hydrographic notes were prepared for the use of the War and Navy Departments, and furnished to them and to the commanders of expeditions. The first copies were referred to an advisory commission composed of Brigadier-General (now Major-General) Barnard, Captain (now Rear-Admiral) Du Pont, Commander (now Rear-Admiral) Davis, and the Superintendent of the Coast Survey. In the Report of the Secretary of the Navy for 1861, he referred to the importance of this Commission. The estimation in which the material, submitted by the Coast Survey, was held by the naval officers who composed the Commission, is shown by the following letter:—

WASHINGTON, *October 2, 1861.*

> SIR: On closing, for the present, the labors of the mixed conference, in which I have presided, I cannot but express the high opinion I have been led to entertain of the usefulness of the Coast Survey to our knowledge of the sea-coasts, sounds, and bays of the Atlantic and Gulf borders of the United States, without which the deliberations of the conference could not have been successfully conducted.
>
> Very truly, your friend and obedient servant,
>
> S. F. DU PONT,
> *Flag-Officer, President.*
> C. H. DAVIS,
> *Commander, Secretary.*

A. D. BACHE, LL. D.,
Superintendent United States Coast Survey,
Washington, D. C.

The name of Admiral Du Pont naturally brings us to the consideration of the most important service which the Coast Survey rendered to the Government in the course of the year 1861.

* * * * * * *

A mysterious fleet, a mixed military and naval expedition, assembled in Hampton Roads. On the 29th of October it sailed towards the South. The naval part of the expedition was commanded by Commodore Du Pont, the land-forces were commanded by Brigadier-General T. W. Sherman. Scarcely had the fleet put to sea, when it encountered a violent gale, which scattered the vessels in every direction. The public mind was much excited lest the storm should prove fatal to the success of the expedition, for it was known that the fleet comprised many craft that were entirely unfit to meet heavy weather.

The crew of the transport *Peerless* were removed when she was in a sinking condition. The marines on board of the steamer *Governor* were with difficulty rescued. But the fleet, although shattered, was not wrecked. As soon as the vessels assembled, operations commenced.

In his Report to the Superintendent of the Coast Survey, Assistant Boutelle, speaking of the preliminaries of the attack, says:

> The *R. B. Forbes* came to me to say that the *Augusta* and *Dale*, steam sloop and gunboat, were outside. I reported the fact to the commodore, and he expressed so earnest a wish to get them in before the attack, that I determined to bring them in at once, though night had already come on. * * *

The *Augusta* took the *Dale* in tow, and we passed in without trouble, having no cast less than nineteen feet, and I had the satisfaction of reporting to the flag-officer their arrival at half-past eleven P. M. Running outside again, I anchored the *Vixen* at the entrance, in readiness to bring in the *Ericsson* and the *Baltic,* drawing twenty and twenty-two feet. * * *

At sunrise we anchored a large spar-buoy at the entrance of the south channel. Mr. Platt and Mr. Jones, first and second officers of this vessel, were then sent on board of the *Baltic* and *Ericsson,* respectively, and I led in with the *Vixen* at half flood. * * *

After anchoring the *Baltic* and *Ericsson,* I went on board of the *Atlantic* with General Sherman, and witnessed the fight. * * *

The attack was made on the morning of the 6th of November. The vessels steamed slowly around, describing the figure of an ellipse, and delivering their broadsides as they passed within short range of Fort Beauregard and Fort Walker, which are on opposite sides of the harbor. The fire of the vessels was so rapid and well-directed, that, as they approached to make their third revolution, the flag of Fort Beauregard was hauled down, and the enemy hastily abandoned both works.

In the Report of Commodore Du Pont to the Navy Department, he remarks:

The Department is aware that all the aids to navigation had been removed, and the bar lies ten miles seaward, with no features on the shore-line sufficient to make any bearings reliable. But, by the skill of Commodore Davis, the Fleet-Captain, and Mr. Boutelle, the able Assistant of the Coast Survey, in charge of the steamer *Vixen,* the channel was immediately sounded out and buoyed. On the evening of Monday, Captain Davis and Mr. Boutelle reported water enough for the *Wabash* to venture in. * * *

In the Report of General Sherman to the War Department, he says:

It is my duty to report the valuable services of Mr. Boutelle, Assistant in the Coast Survey, in assisting me with his accurate and extensive knowledge of this country. * * *

On the Pacific coast, upon the breaking out of hostilities, the Coast Survey steamer *Active* took measures in concert with the military and naval authorities. The vessel was once anchored off Mare Island Navy Yard, for the purpose of protecting the Government property there, which there was reason to believe was endangered. This vessel performed other service, in transporting troops and supplies. The Pacific coast was only temporarily involved in the general disorder which pervaded the country, and there will be no further occasion to notice events in that section.

In the course of the year 1862, of forty-nine officers of various grade on the Coast Survey, thirty-two, in addition to their usual duties, rendered service in military operations. Sub-Assistant Dorr narrowly escaped being killed before Yorktown. The instrument with which he was working was shivered into atoms by a shell thrown by the enemy, and a soldier on picket near by was killed outright. The same shell mortally wounded Lieutenant Wagner, of the Topographical Engineers, and a soldier named Lacter, of the 2d Rhode Island Regiment, who was attached to the surveying party. Messrs. Bradford and Boyd, while surveying on James Island, South Carolina, were surprised by a party of the enemy, but instead of being captured, took the rebels prisoners. Sub-Assistant Oltmanns was dangerously wounded, while on a reconnoissance up Pearl River, the stream which for some distance forms the boundary between Mississippi and Louisiana.

During this year, Major Palmer, who for a long time had been Assistant in charge of the Coast Survey Office, died in consequence of disease contracted from exposure during the Peninsular campaign. He was succeeded in the office by J. E. Hilgard, Assistant on the Coast Survey.

The reconnoissances and surveys for military purposes, executed during the year 1862, were so numerous, that it will not be possible to give more than a synopsis of them. This will be best afforded by the following transcript of portions of Appendix No. 1 of the Superintendent's Report for 1862:

Reconnoissance for defensive purposes, and mapping of the environs and southern approaches of the city of Portland, Maine.

Special hydrographic examination made in the vicinity of Pea-Patch Island, Delaware River, and development of changes by comparison with previous surveys.

Triangulation and plane-table survey of the banks of the Potomac, completed, from Blakistone Island to Washington.

Detailed survey of the environs of Williamsport, Maryland, for military purposes.

Topography, for military use, of the ground north and west of Bladensburg, Maryland, along the line of the District of Columbia.

Plane-table survey commenced of the site and approaches of Fort Lincoln, and other defensive works, near Washington City.

Extension of the Topographical survey in Fairfax County, Virginia, from Falls Church towards Fort Marcy and Lewinsville.

Topography of Manassas Junction, Virginia, and its vicinity, including, with other surface details, the intrenchments erected in 1861.

Plane-table survey on the north side of the Rappahannock River, opposite Fredericksburg, including Falmouth and its environs, and the roads leading to Belle Plain and the upper part of Potomac Creek.

Special topographical service in the Army of the Potomac, on the peninsula between York and James Rivers, including local surveys and general reconnoissance.

Topographical survey of Drummondtown and its vicinity, for military purposes.

Special plane-table surveys of redoubts, forts, and intrenched camps, on the banks of Elizabeth River, Virginia, and in the neighborhood of Norfolk.

Hydrography of the Potomac River, extending upward from Blakistone Island to the vicinity of Indian Head.

Hydrographic survey of the Potomac from Alexandria to Georgetown, including the Eastern Branch to the vicinity of the Navy Yard.

Special service with North Atlantic Blockading Squadron before Yorktown, Virginia; in York River and its branches; extending reconnoissance up the Mattapony River, and guard duty at West Point.

Hydrographic resurvey of Metomkin Inlet, Virginia, including also Metomkin Bay, and development of changes in the shore-line of the entrance, for military purposes. Buoys set to mark the channel into the inlet.

Complete hydrographic resurvey of Hatteras Inlet, including its approaches from seaward and the channels leading into Pamlico Sound. Observations on the tides and currents of Hatteras Inlet, North Carolina, with reference to their effect in changing the shore-lines outside and inside of Pamlico Sound.[1]

Special service at Hatteras Inlet with North Atlantic Blockading Squadron. Hydrography of Oregon Inlet and hydrographic reconnoissance in Neuse River, N. C. Stakes set to mark the channels, and buoys placed on the Middle Ground.

Shore-line survey to determine changes, and hydrographic resurvey of the entrance, approaches, and harbor of Beaufort, N. C.

Special and general service on the coast of South Carolina and Georgia, with the South Atlantic Blockading Squadron.

Shore-line survey, for military purposes, of Stono, Folly, and Kiawah Rivers, and of John's, James's, Cole's, Kiawah, and Folly Islands, including the intrenchments found on their banks.

Shore-line survey, for military purposes, of Beaufort River, S. C., and of the upper part of Broad River, etc.

Hydrography of Stono, Folly, and Kiawah Rivers, and supplementary soundings in Broad and Beaufort Rivers, S. C., etc.

Plane-table surveys, for military purposes, of the ground commanded by the defensive works erected at St. Louis, Mo., in 1861.

The preceding list gives the merest outline of the amount of service which the Coast Survey rendered to the military authorities during the year 1862. The occasion during that year, upon which it most signalized itself by its connection with military operations, was at the forcing of the passage of the Mississippi, an exploit which resulted in the rendition of the city of New Orleans.

In April, 1862, Captain (now Vice-Admrial) Farragut attacked Fort St. Philip and Fort Jackson, situated near the mouth of the Mississippi. Captain (now Rear-Admiral) D. D. Porter commanded the bomb-flotilla, and to that was attached the *Sachem*, in charge of Assistant Gerdes, of the Coast Survey.

During the season immediately preceding the rebellion, the regular triangulation of the Survey had established the positions of certain points near the mouth of the Mississippi. It was, therefore, easy to determine other points, from those whose positions had been calculated. The use to which this process could be applied, was soon exemplified in the bombardment.

By the morning of the 18th of April, when the mortar-vessels, twenty-one in number, took position, the exact distance from each one of them to Fort Jackson had been correctly determined. Some of the vessels lay along the shore of the river, where it is covered with a sparse growth of timber. These were concealed as much as possible from the observation of the enemy, by dressing the masts with foliage, so as to render them undistinguishable from the trees which they overtopped.

The bombardment of Fort Jackson opened immediately after each vessel had been placed in its allotted position; and during the following three days, whenever a vessel was obliged to change its place, the distance from its new position to the fort was redetermined by Coast Survey officers who remained with the flotilla.

Some of the party were in the mean time engaged in making maps of the Mississippi, in the vicinity of the defences. An examination was made of the channels which commence near Fort Jackson and connect the Mississippi with the Gulf of Mexico. The *Sachem* was also employed in transporting the wounded of Commodore Farragut's fleet to the hospital at Pilot Town.

On the 24th of April, Assistant Gerdes accompanied Major-General Butler, and piloted his boats, in an attempt to turn the forts from the direction of the waters to the northward of Fort St. Philip.

In relation to these operations, Commodore Porter, writing to the Superintendent of the Coast Survey, under date of April 29th, says:

> Amid the exciting scenes here, and the many duties that are imposed on me, I must steal a few moments to tell you something of the share the Coast Survey has had in our doings, and to thank you for the valuable assistance rendered me by the party you

[1] This survey was made on account of the encroachment of the sea upon Fort Hatteras.

sent here. * * * The results of our mortar-practice here have exceeded any thing I ever dreamed of; and for my success, I am mainly indebted to the accuracy of positions marked down, under Mr. Gerdes's direction, by Mr. Harris and Mr. Oltmanns. They made a minute and complete survey from the "jump" to the forts, most of the time exposed to fire from shot and shell, and from sharpshooters from the bushes. * * * The position that every vessel was to occupy, was marked by a white flag, and we knew to a yard the exact distance of the hole in the mortar from the forts, and you will hear in the end how straight the shells went to their mark. Mr. Oltmanns and Mr. Harris remained constantly on board to put the vessels in position again when they had to haul off for repairs, or on account of the severity of the enemy's fire. * * * I cannot speak too highly of these gentlemen. I assure you that I shall never undertake a bombardment, unless I have them at my side. Mr. Gerdes has been indefatigable in superintending the work, laboring late at night in making charts and providing the officers in command of ships with them, marking the positions of obstructions in the channel, and making all familiar with the main way.

On May 16th, Commodore Porter again wrote to the Superintendent of the Coast Survey, as follows:

I forward to you, by the *Baltic*, a plan of Fort Jackson (or the remains of it), faithfully drawn, under the direction of Mr. Gerdes, by Messrs. Harris and Oltmanns, Assistants of the Coast Survey. It is a striking specimen of the effects of mortar-practice, showing what can be done when distances are accurately determined, as they were in this case by the gentlemen belonging to the Coast Survey.

During the years which preceded the war, the demand for charts did not average ten thousand annually. In the year 1861, however, the Coast Survey issued twenty-one thousand copies of charts, and in the following year forty-four thousand.

Of course, the general issue of all maps by which the enemy could profit, if they fell into their possessions, was suspended from the commencement of hostilities. Issues of such maps were made only to those who were clothed with the proper authority.

Totally distinct from the charts, is another class of maps, universally called war maps. These have been in great request. The Superintendent, in his Report for 1862, says: "Color printing has been introduced for maps of the seat of war, and has proved very acceptable, the sale of the maps more than reimbursing the cost of their production."

II.

THE preceding paper consisted of a general history of the operations by which the Coast Survey had contributed to the prosecution of the war, from its commencement until the end of the year 1862. The present one will resume the history with the beginning of the year 1863, and conclude it with the cessation of that agency, which continued to be actively and beneficially exerted, until the occasion for its exercise closed with the Rebellion.

* * * * * * *

At the commencement of 1863, all of the army officers connected with the Coast Survey had been detached; and of the navy officers only one remained.

On the coasts of the Atlantic and Gulf of Mexico, of nine assistants, fourteen sub-assistants, and twenty-two aides, twelve assistants, seven sub-assistants, and ten aides served with the military and naval forces during the campaigns of the third year of the rebellion.

In December, 1862, three officers of the Coast Survey reported to Major-General Banks, who, at the time, was preparing for the expedition to the upper country of Louisiana.

They made a survey on the right bank of the Mississippi, opposite to New Orleans. In February, 1863, they made several reconnoissances, and, in conjunction with Lieutenant Loring, of Brigadier-General Emory's staff, they examined the bayous which connect the Atchafalaya, Red River, and Mississippi. Maps and tracings had been sent to the military authorities before the night of the 25th, when the gunboat *Kinsman*, which had been employed in the surveys, snagged and sank in deep water.

During March, two of these officers reported at Baton Rouge, where they engaged in reconnoissances, surveying, and construction of fortifications.

At the close of March, one of the officers was assigned to duty with the staff of Brigadier-General (now Major-General) Weitzel, and served as engineer and topographer. When the greater part of the army had passed Berwick's Bay, he accompanied Lieutenant Harwood, on the gunboat *Clifton*, in order to attend the troops under the command of Brigadier-General Grover, who deemed his intimate knowledge of the country lying back of Bayou Têche to be of especial value to the expedition. After the engagement at Irish Bend, resulting in the capture of the enemy's works, it was decided to make a naval attack upon Fort Butte à la Rose, and thus open the Atchafalaya. Being well acquainted with

the location of the fort, the same officer was attached to the squadron. The *Clifton* having been disabled in the attack, he went on board of the *Estrella*, at the request of her commander, Captain A. P. Cooke. A few days afterwards, the *Estrella* passed through the Atchafalaya, and opened communication with Admiral Farragut.

While engaged in reconnoissance at the siege of Port Hudson, where he remained until the surrender, he joined the expedition to Sabine Pass, and upon his return, reported to Major-General Franklin, and served through the campaign in Western Louisiana.

The knowledge possessed by Admiral Porter in regard to the usefulness of officers of the Coast Survey, when acting in concert with naval movements,—an experience which he had acquired at the bombardment of Forts Jackson and St. Philip,—no doubt disposed him to accept with pleasure the services of two, who were sent to the fleet operating in the Mississippi.

On the 27th of November, 1862, they reported at Cairo, Illinois. One was sent on board of the flagship *Black Hawk*, and compiled maps of the Yazoo region.

On the 9th of December, the other officer was dispatched from Cairo, on board of the gunboat *Tyler*, to sketch the shores of the Yazoo. On the 23d, the gunboat steamed up that river. Five miles from the mouth, she encountered a heavy fire of musketry from both shores; but she held on her course during the day, and at night anchored in the stream. The next day, the survey of the banks of the river was resumed, and mainly completed for the purpose contemplated by General Sherman and Admiral Porter. The map was immediately duplicated, and afforded the preliminary information necessary for the debarkation effected by the army of General Sherman, on the 26th of December.

As already incidentally mentioned, the siege had to be abandoned.

More than thirty copies of the sketches delineating the approaches to Vicksburg were furnished in answer to the requisition of the military and naval commanders. After the 20th of January, 1863, the topography of the approaches was steadily pushed forward, and even included a point within six hundred yards of the enemy's batteries, and three miles beyond the pickets of our forces.

Early in January, 1863, the Superintendent of the Coast Survey received from Admiral Porter a communication containing the following expressions:

> Mr. Strausz and Mr. Fendall have rendered themselves extremely useful to me in compiling maps for the use of the Army and Navy, and making surveys of the field of operations before Vicksburg. I sent Mr. Strausz down in a vessel, near the front of the city, to make plans and take sketches of the batteries, which he did to my satisfaction, giving us information that we have not possessed before, and showing the impracticability of attacking Vicksburg by water alone. We might otherwise have run our heads against a stone wall. During the ascent of the Yazoo River, and while engaged in taking up torpedoes, our passage was contested at every step by two or three thousand riflemen, in pits and behind levées; so protected that our guns could not hurt them. The vessels were much cut up, the rifle-balls going through and through the light upper works. Mr. Strausz accompanied the expedition, and while under the fire, produced a good chart of the river and back country, with which we have made our advances. I could not have got along very well without these maps.

The important capture of Arkansas Post, otherwise known as Fort Hindman, took place on January 11th, 1863, in the interval between the two sieges of Vicksburg. Previously, both of the officers mentioned by Admiral Porter had been engaged on a map of Arkansas River, for the express purpose of facilitating the attack on Arkansas Post. After the capture of the position, they executed a detailed survey of the fort and vicinity.

After the raising of the siege of Vicksburg, and the relinquishment of the attempt to turn the fortifications on Haines's Bluff, by passing gunboats through Steele's Bayou and Deer Creek, during which attempt, the officers of the Coast Survey executed a map of the route pursued by the expedition, the plan of running the batteries at Vicksburg was adopted by Major-General (now Lieutenant-General) Grant, and successfully executed, as the whole world knows.

This exploit was accomplished on the night of April 16th, 1863. Then came the memorable series of victories, when General Grant, delivering battle after battle, drove one army of the enemy across Black River, and the other into the lines of Vicksburg, which, with communications severed and works invested, was at last forced to surrender its garrison as prisoners of war.

Let us now glance at operations which, progressing during the same interval of time, were so distant in space, that to examine them, we shall be obliged to mentally skip nearly half way across the continent.

On the 30th of January, 1863, the Coast Survey steamer *Bibb* anchored off Charleston Bar. On two successive nights the boats of the steamer were lowered, and parties proceeded with secrecy and dispatch to make a careful examination of the channels. It will be recollected that early in the war, a number

of hulks, commonly known as the Stone Fleet, were sunk across the main ship-channel. Renewed soundings were therefore necessary before an attack, for the purpose of ascertaining what modifications had occurred in the depth as given on the Coast Survey chart of Charleston Harbor.

The information acquired by the examination was used in the passage of the iron-clads to the attack on Fort Sumter, on the 7th of April, 1863. On the 5th of April soundings were again taken. The result confirmed the previous selection of "Pumpkin Hill Channel" as best for the passage of the Bar.

In Admiral Du Pont's official order, giving dispositions for the attack, he says:

The Bar will be buoyed by the *Keokuk*, Commander Rhind, assisted by C. O. Boutelle, Assistant United States Coast Survey, commanding the *Bibb*; by Acting-Ensign Platt, and the pilots of the squadron.

Admiral Du Pont wrote to the commander of the *Bibb*, in relation to the first examination of the Bar:

Your examination of the channels and water on the Charleston Bar seems to have been conducted with great skill and boldness, and I beg you to receive my thanks and commendation for the same, and for the important information obtained.

In the Report of the Superintendent of the Coast Survey, 1863, he says:

Mr. Robert Platt, the executive officer of the *Bibb*, was permitted to pilot the *Weehawken*, * * * and was temporarily disabled by the breaking of a bolt under the concussion of a heavy shot from one of the rebel batteries.

The attack on the 7th of April failed. Success would have been astonishing. No mere naval attack could have reduced Fort Sumter. The work was intact: and a few guns afloat were pitted against the converging fire of hundreds ashore.

At the commencement of 1863, several officers of the Coast Survey were ordered to report to Major-General Foster, commanding the Department of North Carolina. They assisted in the operations with which the public is familiarized in connection with the names Newbern and Little Washington.

On June the 1st, General Foster wrote to the Superintendent of the Coast Survey:

Mr. Fairfield has just given me a copy of his triangulation on the Neuse River, which puts me in mind to thank you for the assistance which you have rendered in sending him, Mr. West, and Mr. Rockwell, here. Their labors have aided very much in obtaining a correct knowledge of the country for military purposes.

Towards the last of May, rumors of an intended invasion of the North prevailed. Many days had not elapsed, when anticipation was realized, for the movement began. General Lee suddenly quitted his winter-quarters, and marched, no one, at first, knew whither. The Army of the Potomac marched to interpose between the enemy and any threatened quarter, but the movement of the enemy was well masked, and, for a while, there was fearful suspense in the North.

This was augmented, when, on the 28th of June, the Army of the Potomac, then on a forced march to intercept the enemy, was subjected to a change of commanders. On that day, Major-General Meade assumed chief command. On the 1st of July, at Gettysburg, the enemy's advance was encountered by Major-General Reynolds, and on the next day, General Lee found himself in the presence of the Army of the Potomac.

On the 16th of June, the Superintendent of the Coast Survey, in anticipation of danger to Philadelphia from the movement then in progress, offered his services to the Mayor of Philadelphia. As soon as Major-General Dana assumed command in the city, he telegraphed to the Superintendent: "We have no engineer, and your aid would be invaluable, if you are still able to renew your kind offer, and could come at once, with such of your corps as you can bring."

On the 27th of June, the Superintendent arrived. From every direction officers of the Coast Survey trooped to the city. Officers of various City Departments, graduates of scientific institutions, employés of companies, and many others, eagerly proffered their services, and were at once distributed through the district surrounding the city.

The general result of the operations which ensued under the direction of the Superintendent of the Coast Survey, as Chief Engineer, is comprised in a reconnoissance covering an area of eighty square miles, the construction of a number of small fieldworks, and the selection of sites for others, to be constructed in case of emergency.[1]

[1] In the Coast Survey Report for 1863, are included full details in relation to the reconnoissance and construction of defences at Philadelphia, with due mention of the services of all engaged. The Report is on the eve of publication, some of the advance sheets having been sent to me by J. E. Hilgard, Esq., Assistant in charge of the Coast Survey Office, to whom I am indebted for much data available in the preparation of these papers at the request of the Editor of the UNITED STATES SERVICE MAGAZINE.

It was never contemplated that these defences should resist a combined attack from General Lee's army, as supposed by two or three anonymous writers, who asserted that the sites were badly selected, and the works wrongly constructed.

The works were constructed in apprehension of a *coup de main* executed by cavalry. They, for the most part, stood in lieu of *têtes de pont*, and commanded not only the bridges, but the points from which an enemy could have shelled the city. As for the faultiness of sites and works, probability is strongly adverse to the supposition, for the Chief Engineer is a graduate of West Point, and his labors were subjected to daily inspection by General Dana.

On the 19th of September, 1863, the battle of Chickamauga commenced. The issue was not then decisive; but on the next day, the rout of the right wing of the Union forces would have been fatal to the whole army, had not the tenacity of the left wing, commanded by Major-General Thomas, deterred the enemy from pursuit of the disorganized masses of troops that retreated in disorder towards Chattanooga. Under cover of night, General Thomas fell back to Rossville, and, on the evening of the 21st, withdrew his troops into the defences of Chattanooga.

The enemy immediately occupied Lookout Mountain and Missionary Ridge, and stretched his line across Chattanooga Valley. General Rosecrans's communication by the left bank of the Tennessee with Bridgeport being thus cut, and his other lines of supply jeopardized by a cavalry raid, his army was completely isolated, and, for a time, in a precarious situation. Matters had arrived at a desperate pass, when General Grant, arriving at Louisville, telegraphed to General Thomas, who superseded General Rosecrans, to hold out to the last extremity.

The preliminary operation undertaken was the opening of the railroad communication on the left bank of the Tennessee to Bridgeport. This was secured by a concerted movement, consisting of a strong lodgment effected on the left bank of the Tennessee, at Brown's Ferry, and by marching from Bridgeport the re-enforcements from the Army of the Potomac, composed of the Eleventh and Twelfth Corps, under command of Major-General Hooker.

Brigadier-General (now Major-General) W. F. Smith, Chief Engineer of the Army of the Cumberland, originated and executed the former movement. On his staff was an officer of the Coast Survey, who rendered important service in the reconnoissance. In another reconnoissance, he examined the ground between the North Chickamauga and Brown's Ferry, with the view of ascertaining routes that would mask movements of troops, and preparations for laying pontoons.

Previously to the enemy's occupation of Lookout Mountain and Missionary Ridge, two officers of the Coast Survey had almost completed a map of the ground. From the survey of Lookout Mountain knowledge was acquired of the practicability of the attack that carried it.

As the result of the battles which took place on the 24th and 25th of November, the rebel army was partially routed, and forced to retreat to Ringgold, and eventually to Dalton.[1]

In December, an officer of the Coast Survey was sent to Chattanooga, by request of Brigadier-General W. L. Elliott, Chief of Cavalry of the Army of the Cumberland. He made a survey comprising fifty square miles of the country south of Chattanooga, inclusive of the battle-field of Chickamauga. He also drew a map, showing the line of defences around Chattanooga, and indicated range-marks for the purposes of the Chief of Artillery.

At the request of Major-General Foster, two officers of the Coast Survey joined his command in East Tennessee. Under the direction of Captain O. M. Poe, Corps of Engineers, and Chief Engineer of the Department of the Ohio, they made a survey of all the approaches to Knoxville.

When the Head-Quarters of the Military Division of the Army of the Mississippi were removed to Nashville, two officers of the Coast Survey executed a map of the vicinity. One of them also examined the numerous branches which empty into Cumberland River, from the south, between Nashville and the South Fork. This was for the purpose of finding a shorter route for the supply of the army at Knoxville.

The following extracts from a letter from General Thomas to the Superintendent of the Coast Survey refer to a portion of the service just mentioned, as having been rendered by officers of the Coast Survey:

Permit me to thank you most cordially for your kindness in placing under the direction of Brigadier-General W. F. Smith, Chief Engineer, Department of the Cumberland, Messrs.

[1] The combat of the 23d, although it resulted in securing the position, Indian Hill (Orchard Knoll), was really a reconnoissance in force.

P. C. F. West, Clarence Fendall, F. W. Dorr, and J. W. Donn, officers of the Coast Survey Service. In the short time they have been on duty at these Head-Quarters, they have rendered most valuable service in reconnoitering, surveying, and mapping the country. * * *

I shall desire to retain these officers, with General Smith, as long as you can spare their services.

Service with the Mississippi Squadron was not intermitted. A large party of the Coast Survey was, for the third consecutive season, placed at the disposal of Admiral Porter. During the third season, which lasted from the beginning to the middle of 1864, the party executed a reconnoissance map between Rodney and Palmyra, comprising about fifty miles of the course of the Mississippi, delineating its main channels and bars, with the cultivated ground and swamps on its banks, the towns, landing-places, and roads leading towards the interior of the country. They made a topographic and hydrographic survey of Grand Gulf, Mississippi. The survey of Vicksburg was also completed. On the Ohio, between Cairo and Mound City, they made another topographic and hydrographic survey. One of the party accompanied the Red River Expedition. The light-draught steamer used to penetrate the shallow streams was often waylaid and riddled with rifle-balls. Another vessel, with surveyors on board, was once obliged to engage a battery in position near Gaines's Landing, on the Arkansas shore of the Mississippi. She was struck nine times with solid shot or shell.

We have now fairly entered the year 1864, the last work described having continued until June.

In the East, before that time, came the last famous advance on Richmond, when General Grant intended to fight it out on that line, if it took all summer. Sooth to say, he did not fight it out on that line, and it took not only summer, but autumn and winter. But with opening spring, and as if by enchantment, the promise of the year before blossomed, bloomed, and bore glorious fruit.

During the direct advance against Richmond, Major-General W. F. Smith moved his command to the head of York River. From thence, with twenty men as an escort, the Coast Survey officer who had served on his staff at Chattanooga, was dispatched to open communication with the army of General Grant. This commission was successfully executed, and the command participated in the battles at Cold Harbor.

During the summer campaign of 1864, in the East, an officer of the Coast Survey accompanied the army of Major-General Butler, in the movement on Bermuda Hundred. He made several surveys, adding much to the military map of Southeastern Virginia.

In June, an officer of the Coast Survey was detailed to join the squadron of Admiral S. P. Lee, in James River. He took advantage of a temporary abandonment of the Howlett House Battery, and sounded the upper part of the river, usually swept by the enemy's guns. The use of obstructions in the river having been decided upon, the duty of determining the line which they should occupy devolved on him. In the spring of 1864, just before the advance of General Sherman,—the grand march which will be famous in history,—his Chief Engineer, Captain O. M. Poe, Corps of Engineers, wrote as follows to J. E. Hilgard, Esq., Assistant in charge of the Coast Survey Office:

I have just received yours of the 26th of April, enclosing proof-sheet of map of Northern Alabama and Georgia. * * *

I am directed by General Sherman, commanding the Military Division, to perform the very pleasant duty of thanking the Coast Survey for the promptness with which the map was gotten up, and its fine appearance. It will be the standard during the campaign upon which we have just entered. * * *

In Shenandoah Valley, during the campaign in the fall of 1864, an officer of the Coast Survey was attached to the staff of General Emory, and executed reconnoissance, and often superintended the construction of breastworks.

At the request of Quartermaster-General Meigs, a minute topographical survey was made on the estate at Arlington, Va., with a view to the adoption of the ground as a National Cemetery.

During the winter of 1864–'65, an officer of the Coast Survey was actively engaged as Engineer to the Naval Dépôt Commission, at Louisville, Mound City, Cairo, St. Louis, Carondelet, and Memphis. The Report made to Congress by the Commissioners, Rear-Admiral Davis, Colonel Bowman, Corps of Engineers, and G. W. Blunt, Esq., is accompanied by the maps executed by the Engineer to the Commission.

Under directions from Admiral S. P. Lee, the same officer, with a party, has made a reconnoissance map of Tennessee River, from Paducah to Clifton, one hundred and fifty-three miles. It will be continued to Florence. This map is of the greatest value, for the police of the river; as, in addition to the topography

and hydrography, it comprises copious notes in regard to the stages of water, and other information useful for vessels patrolling the stream.

The Coast Survey steamer *Bibb*, with a schooner as tender, continued to serve with the South Atlantic Blockading Squadron. As soon as Savannah was captured by General Sherman, the approaches to it by Ogeechee, Wilmington, and Savannah Rivers, were examined, buoyed, and lighted. Torpedoes were removed, and the rebel fortifications were mapped. Subsequently, while sounding off Battery Bee, Charleston Harbor, the *Bibb* narrowly escaped destruction from a torpedo.

On the occasion of the first attack upon Fort Fisher, Admiral Porter, in his Report, thus speaks of an officer of the Coast Survey, in connection with the attempt to damage the fort by exploding the celebrated torpedo-boat:

> On the 23d, I directed Commander Rhind to proceed and explode the vessel right under the walls of Fort Fisher; Mr. Bradford, of the Coast Survey, having gone in at night, and ascertained that we could place a vessel of seven feet draught right on the edge of the beach. * * *
>
> I enclose herewith the report of Commander Rhind, with the names of the gallant fellows who volunteered for this desperate service. Allow me to mention the name of Mr. Bradford, of the Coast Survey, who went in and sounded the place where the *Louisiana* was to go in, and has always patiently performed every duty he has been called on to carry out.

Two officers of the Coast Survey, with their aides, accompanied the march of General Sherman. The enemy made so little opposition, that one of the officers, in reporting his arrival at Goldsboro', wrote to the Coast Survey Office in Washington: "Our march has been so rapid, that our services have only been required at rare intervals." In a subsequent letter, he announces that he and his brother officer had finished a map of the vicinity of Goldsboro.

Surveying has continued in Maryland and Virginia. For military and naval purposes, numerous inlets on the Southern coast have been repeatedly sounded, to keep pace with changes in the depth of water. The Corps of Engineers has been often indebted to the Coast Survey for topography specially executed to facilitate the construction of fortifications. Coast Survey vessels have combined with the Light-House Service, in insuring safety to our numerous vessels engaged on the coast. Buoys have been set, or re-set, and signal-lanterns often placed for navigation or attack by night. The compasses of iron vessels and iron-clads have been adjusted. The Tax Commissioners in Florida have received topographical aid. In addition to these and other special duties, the regular work of the Coast Survey has been carried on, wherever feasible.

The Coast Survey Office, in all its divisions, has been indefatigable in its contributions to the necessities of the times. To the Army and Navy, and to every accredited quarter, information has been promptly furnished. In Coast Survey charts alone, sixty-five thousand nine hundred and seventy-one copies were distributed during 1863 and 1864.

With this account, which, lengthy as it may appear, is but a meagre notice of the various Coast Survey operations which have benefited the country during the war, further details must be omitted, lest the space allotted to this paper be too much curtailed to admit of a few concluding matters of a general character.

Brigadier-General Totten, Chief of the Corps of Engineers, in his Report on the defences of the Western coast, says:

> I would here mention, as one of the many services rendered by the United States Coast Survey operations to the defensive system of the country, that it is to explorations of Coast Survey parties we are indebted for the hint of a probable line of defence across these deep inlets and sounds.

Even in diplomacy, a realm, one would suppose, far beyond cognizance of surveying, the aid of the Coast Survey has been sought. The following letter to the Superintendent of the Coast Survey, from F. W. Seward, Esq., Assistant Secretary of State, indicates the manner in which such aid could subserve the interests of the country:

> In the early part of the rebellion, the Department found it convenient and useful to transmit to the diplomatic and consular officers of the United States at the principal places in foreign countries, a map showing the progress of the Union armies in crushing the rebellion. During the present month, a review of the operations of the war, on sea and land, has been prepared and sent to many of our agents abroad. A few only of the maps prepared as it is believed, at your office, which were intended to accompany it, were received in time to be transmitted with this review.
>
> The public interest would be promoted if the Department could receive from your office three hundred additional copies of the map above mentioned.

APPENDIXES.

Appendix 1.—ASSIGNMENTS OF OFFICERS TO DUTY WITH ARMY AND NAVY, 1861–1865.

SERVICE OF COAST SURVEY OFFICERS WITH THE ARMY.

ADAMS, I. HULL: Col. J. N. Macomb; Maryland; 1863.
AMES, T. E.: Maj. Gen. Burnside; North Carolina; 1862.
ANDERSON, HORACE: Maj. Gen. J. G. Foster; North Carolina; 1863.
BACHE, A. D., Superintendent: Maj. Gen. N. J. T. Dana; defenses of Philadelphia; 1863.
BACHE, C. M.: Lieut. Col. J. N. Macomb; defenses of Washington; 1861 and 1862.
——— Maj. Gen. McDowell; Col. J. N. Macomb; defenses of Washington; 1862.
——— Brig. Gen. King; Virginia; 1862.
——— Maj. Gen. Franklin; Virginia; 1862 and 1863.
——— Col. J. N. Macomb; defenses of Washington; 1863.
——— Gen. Barnard; Virginia; 1863.
——— Maj. Gen. N. J. T. Dana; defenses of Philadelphia; 1863.
——— Col. W. F. Reynolds; defenses of Baltimore; 1864.
BACHE, H. W.: Brig. Gen. Lockwood; Virginia; 1861.
——— Gen. Barnard; defenses of Washington; 1862 and 1863.
——— Col. F. W. Reynolds; defenses of Baltimore; 1864.
BACHE, R. M.: Maj. Gen. Halleck; Col. R. D. Cutts; defenses of St. Louis; 1862 and 1863.
——— Maj. Gen. N. J. T. Dana; defenses of Philadelphia; 1863.
BIXBY, C. L.: Brig. Gen. I. I. Stevens; South Carolina; 1861.
BOUTELLE, C O.: Maj. Gen. N. J. T. Dana; defenses of Philadelphia; 1863.
BOWIE, T. C.: Lieut. Col. J. N. Macomb; defenses of Washington; 1861.
BOYD, C. H.: Col. W. F. Reynolds; defenses of Baltimore; 1863.
——— Gen. Barnard; defenses of Washington; 1863.
——— Maj. Gen. Thomas; staff duty, defenses of Chattanooga; 1863 and 1864.
——— Maj. Gen. Thomas; staff duty; Tennessee; 1865.
BRADFORD, J. S.: Maj. Gen. N. J. T. Dana; defenses of Philadelphia; 1863.
CORDELL, EDWARD: Maj. Gen. Burnside; North Carolina; 1862.
COURTENAY, E. H.: Maj. Gen. Barnard (Col. J. N. Macomb); defenses of Washington; 1863.
CUTTS, R. D.: Resigned to enter Army.
DAVIDSON, GEORGE: Maj. Gen. N. J. T. Dana; defenses of Philadelphia; 1863.
DENNIS, W. H.: Gen. Seymour; Florida; 1864. Also staff duty, 1864.
——— Maj. Gen. Foster; Georgia; 1864 and 1865.
——— Maj. Gen. Gillmore; South Carolina; 1865.
DILLAWAY, C. P.: Maj. Gen. Burnside; North Carolina; 1862.
——— Maj. Gen. Thomas; Tennessee; 1865.
DONN, J. W.: Brig. Gen. A. A. Humphreys; Virginia; 1862.
——— Gen. Sykes; Virginia; service as guide; 1862.
——— Col. W. F. Reynolds; defenses of Baltimore; 1863.
——— Col. J. N. Macomb; defenses of Washington; 1863.
——— Maj. Gen. Smith; defenses of Nashville; 1864.
——— Maj. Gen. Butler (Brig. Gen. Weitzel); Virginia; 1864.
——— Maj. Gen. Smith; defenses of Chattanooga; 1864.
——— Lieut. J. R. Meigs and Maj. C. S. Stewart; Potomac River; 1864 and 1865.
DORR, F, W.: Brig. Gen. A. A. Humphreys; Virginia; 1862.
——— Gen. Sykes; Virginia; service as guide; 1862.
——— Maj. Gen. Smith; defenses of Nashville; 1864.
——— Maj. Gen. Smith; defenses of Chattanooga; 1864.
——— Maj. Gen. Sherman (Col. O. M. Poe); Georgia and South Carolina; 1865.

FAIRFIELD, G. A.: Maj. Gen. J. G. Foster; North Carolina; 1863.
FAUNTLEROY, A. R.: Maj. Gen. N. J. T. Dana; defenses of Philadelphia; 1863.
FENDALL, CLARENCE: Gen. W. F. Smith; Tennessee; 1863.
FERGUSON, CHARLES: Col. J. N. Macomb; Maryland; 1862 and 1863.
——— Col. J. N. Macomb; defenses of Washington; 1863 and 1864.
GERDES, F. H.: Maj. Gen. Butler; pilot duty; 1862.
GRANGER, F. D.: Maj. Gen. Foster; Georgia; 1864 and 1865.
HALTER, R. E.: Maj. Gen. Butler; Louisiana; pilot duty; 1862.
——— Maj. Gen. N. J. T. Dana; defenses of Philadelphia; 1863.
HARDING, W. W.: Maj. Gen. Franklin; Maryland and Virginia; 1861.
——— Maj. Gen. Sherman (Col. O. M. Poe); Georgia, South Carolina, and North Carolina; 1865.
HARRISON, A. M.: Gen. Barnard: defenses of Washington; 1862 and 1863.
HEIN, C. S.: Col. W. F. Reynolds; defenses of Baltimore; 1863.
——— Col. J. N. Macomb; defenses of Washington; 1863.
——— Col. W. F. Reynolds; defenses of Baltimore; 1864.
——— Col. C. S. Stewart; Potomac River; 1865.
HERGESHEIMER, E.: Maj. Gen. N. J. T. Dana; defenses of Philadelphia; 1863.
HOLT, S. P.: Gen. Seymour; Florida; 1864.
HOSMER, Charles: Maj. Gen. Franklin; Maryland and Virginia; 1862.
——— Maj. Gen. Banks; Texas; 1862.
——— Brig. Gen. Lockwood; Virginia; 1861.
——— Maj. Gen. Banks (Gen. Grover); Louisiana; 1862 and 1863.
——— Maj. Gen. Banks (Gen. Grover); Louisiana; staff duty; 1863 and 1864.
IARDELLA, C. T.: Col. W. F. Reynolds; defenses of Baltimore; 1863.
——— Col. W. F. Reynolds; defenses of Baltimore; 1863 and 1864.
——— Col. W. F. Reynolds; defenses of Baltimore (Maj. C. N. Turnbull); 1863.
LINDENKOHL, A.: Col. W. F. Reynolds (Col. J. H. Alexander); defenses of Baltimore; 1863.
——— Gen. Barnhard; defenses of Washington; 1862.
——— Lieut. J. R. Meigs; West Virginia; 1863 and 1864.
LUEBER, F. A.: Maj. Gen. Franklin; Maryland and Virginia; 1861.
——— Brig. Gen. Lockwood; Virginia; 1861 and 1862.
——— Col. W. F. Reynolds; defenses of Baltimore; 1863.
——— Col. J. N. Macomb; defenses of Washington; 1863.
LYMAN, S. H.: Capt. H. L. Abbot (Banks' expedition); Louisiana; 1863.
——— Maj. D. C. Houston (Banks' expedition); Louisiana; 1863.
MCGRATH, ROBERT E.: Maj. Gen. N. J. T. Dana; defenses of Philadelphia; 1863.
——— Maj. Gen. Halleck (Col. R. D. Cutts); defenses of St. Louis; 1863.
MCMURTRIE, W. B.: Maj. Gen. N. J. T. Dana; defenses of Philadelphia; 1863.
MABINDIN, H. L.: Maj. Gen. Butler (Brig. Gen. Weitzel); Virginia; 1864.
——— Lieut. J. R. Meigs and Maj. C. S. Stewart; Potomac River; 1864 and 1865.
MECHAN, JOHN: Maj. Gen. Franklin; Maryland and Virginia; 1861.
——— Maj. Gen. Halleck (Col. R. D. Cutts); defenses of St. Louis; 1862.
——— Col. J. N. Macomb; defenses of Washington; 1863.
MITCHELL, A. C.:Maj. Gen. Butler; Gulf of Mexico; pilot duty.
OLTMANNS, J. G.: Gen. Barnard; defenses of Washington; 1861.
——— Maj. Gen. Banks (Brig. Gen. Weitzel); Louisiana; 1863.
——— Maj. Gen. Franklin; Louisiana; 1863.
——— Maj. Gen. Emory; Virginia; 1863.
——— Maj. Gen. Franklin; Louisiana and Texas; service as aid-de-camp; 1864.
——— Maj. Gen. Emory; Virginia; staff duty; 1864 and 1865.
PLATT, FRANKLIN: Maj. Gen. Sherman (Col. O. M. Poe); Georgia, South Carolina, and North Carolina; 1865.
ROBBINS, T. W.: Lieut. Col. J. N. Macomb; Virginia; 1861.
——— Maj. Gen. McDowell (Col. J. N. Macomb); Virginia; 1862.
——— Brig. Gen. King; Virginia; 1862.
ROCKWELL, C.: Brig. Gen. I. I. Stevens; South Carolina; 1861.
——— Maj. Gen. Foster; North Carolina; 1863.
——— Maj. Gen. N. J. T. Dana; defenses of Philadelphia; 1863.
——— Maj. Gen. Butler; Virginia; 1863.
——— Maj. Gen. Foster (Capt. O. M. Poe); 1863 and 1864.
——— Maj. Gen. Sherman (Col. O. M. Poe); Georgia; 1865.
SCHOTT, C. A.: Maj. Gen. Barnard (Col. J. N. Macomb); defenses of Washington; 1863.

SENGTELLER, L. A.: Maj. Gen. Burnside; North Carolina; 1862.
SULLIVAN, J. A.: Lieut. Col. C. S. Stewart; Potomac River; 1864 and 1865.
TALCOTT, R. H.: Maj. Gen. Foster (Capt. O. M. Poe); Tennessee; 1863 and 1864.
THOMSON, McL. W.: Lieut. J. R. Meigs and Maj. C. S. Stewart; Potomac River; 1865.
WADSWORTH, A. S.: Maj. Gen. Burnside (Brig. Gen. Foster); North Carolina; 1862.
WHITING, H. L.: Lieut. Col. J. N. Macomb; Virginia; 1862.
——— Maj. Gen. N. J. T. Dana; defenses of Philadelphia; 1863.

SERVICE OF COAST SURVEY OFFICERS WITH THE NAVY.

ADAMSON, J. B.: Admiral D. D. Porter; Mississippi and Ohio Rivers; 1864 and 1865.
ANDERSON, HORACE: Admiral S. P. Lee; North Carolina; 1863.
BOUTELLE, C. O.; Admiral Du Pont; Commanding steamer *Bibb;* South Carolina; 1861, 1862, and 1863.
——— Admiral Dahlgren; South Carolina; 1864.
——— Admiral Dahlgren; commanding steamer *Vixen;* 1864.
——— Admiral Dahlgren; commanding steamer *Bibb;* South Carolina; 1864 and 1865.
BOWIE, T. C.: Admiral D. D. Porter; Mississippi River; 1862.
——— Admiral Bailey; Florida; 1863.
——— Admiral D. D. Porter; Mississippi and Ohio Rivers; 1864.
———Admiral S. P. Lee; Mississippi, Tennessee, and Ohio Rivers; 1864 and 1865.
BOYD, C. H.: Admiral Du Pont; South Carolina; 1862.
BRADFORD, G.: Commodore Davenport on U. S. S. *Commodore Hull;* North Carolina; 1864.
——— Admiral S. P. Lee; North Carolina; 1864.
——— Admiral D. D. Porter; South Carolina; 1864 and 1865.
BRADFORD, J. S.: Admiral Du Pont; South Carolina; 1862 and 1863.
——— Admiral S. P. Lee; staff duty; Virginia; 1864.
——— Admiral S. P. Lee; Virginia and North Carolina; 1864.
——— Admiral S. P. Lee; served on flagship; 1864.
——— Admiral D. D. Porter; North Carolina; also duty on flagship; 1865.
BROWN, JAMES W.: Admiral S. P. Lee; North Carolina; 1864.
——— Admiral Dahlgren; South Carolina; 1864 and 1865.
CORDELL, EDWARD: Admiral Bailey; Florida; (commanding steamer *Vixen*); 1863.
——— Admiral S. P. Lee (Capt. Dove); North Carolina; 1864.
——— Admiral D. D. Porter; North Carolina; 1865.
DAVIDSON, GEORGE: Capt. C. F. Pendergrast; Delaware River; 1862.
DENNIS, W. H.: Admiral Du Pont; South Carolina; 1861.
——— Admiral Du Pont; South Carolina and Georgia; (commanding schooner *Caswell*); 1863.
——— Admiral Dahlgren; (commanding schooner *Caswell*); 1864.
DE WEES, H. M.: Admiral Bailey; Florida; 1863.
——— Admiral S. P. Lee; Virginia and North Carolina; 1864.
——— Admiral Porter; North Carolina; 1864 and 1865.
DIETZ, F. H.: Admiral Dahlgren; South Carolina; 1863 and 1864.
DILLAWAY, C. P.: Admiral Dahlgren; Florida; 1864.
EDWARDS, W. S.: Admiral Du Pont; South Carolina; 1862.
——— Admiral Dahlgren; South Carolina; (commanding schooner *Bailey*); 1863 and 1864.
FAIRFIELD, G. A.: Admiral S. P. Lee; North Carolina; (commanding schooner *James Hall*); 1863.
FAUNTLEROY, A. R.: Admiral Dahlgren; Florida; 1864.
——— Admiral S. P. Lee; Mississippi, Tennessee, and Ohio Rivers; 1864 and 1865.
FENDALL, CLARENCE: Admiral D. D. Porter; Mississippi River; service on U. S. S. *Black Hawk;* 1863.
——— Admiral D. D. Porter; Mississippi and Ohio Rivers; 1863 and 1864.
——— Admiral D. D. Porter; Red River; service on flagship *Black Hawk;* 1864.
——— Admiral Dahlgren; Georgia; 1865.

FORNEY, STEHMAN: Admiral Dahlegren; Georgia; 1865.
FRAZER, P. F., Jr.: Admiral Du Pont; South Carolina; 1862 and 1863.
FRENCH, C.: Admiral Du Pont; South Carolina; 1862.
GERDES, F. H.: Admiral D. D. Porter; Gulf States; (commanding steamer *Sachem*); 1862.
——— Admiral D. D. Porter; (commanding steamer *Curlew*); Mississippi and Ohio Rivers; 1864.
——— Admiral S. P. Lee; Mississippi, Tennessee, and Ohio Rivers; 1864 and 1865.
GILBERT, J. J.: Admiral D. D. Porter; North Carolina; 1864 and 1865.
GOLDIN, J. A.: Admiral Dahlgren; South Carolina; 1864 and 1865.
HALTER, R. E.: Admiral D. G. Farragut; Gulf coast; (commanding schooner *Wilder*); service on flagship *Hartford;* 1862.
——— Admiral D. D. Porter; Gulf States; 1862.
——— Admiral D. D. Porter; Mississippi River; 1862.
——— Admiral S. P. Lee; Virginia and North Carolina; 1863 and 1864.
——— Admiral Dahlgren; South Carolina; 1864 and 1865.
HARDING, W. W.: Admiral Du Pont; South Carolina; 1861 and 1862.
——— Admiral Du Pont; South Carolina; 1862 and 1863.
——— Admiral Dahlgren; South Carolina; 1864.
——— Admiral Dahlgren; Florida; 1864.
HARRIS, J .S.: Admiral D. D. Porter; Gulf States; 1862.
HOLT, S. P.: Admiral Dahlgren; South Carolina; 1864.
IARDELLA, C. T.: Admiral Bailey; Florida; 1863.
JUNKEN, CHARLES: (Acting master Robert Platt on steamer *Corwin*); North Carolina; 1865.
LONGFELLOW, H. W.: Admiral Du Pont; South Carolina; 1862.
MCMURTRIE, W. B.: Admiral D. D. Porter; North Carolina; 1865.
MARINDIN, H. L.: Admiral S. P. Lee; Virginia and North Carolina; 1864.
MITCHELL, A. C.: Admiral Du Pont; South Carolina; 1861.
——— Admiral Dahlgren; South Carolina; 1864.
MITCHELL, HENRY: Commodore L. M. Goldsborough; North Carolina; 1862.
MOSMAN, A. T.: Admiral S. P. Lee; Mississippi, Tennessee, and Ohio Rivers; 1864 and 1865.
NICHOLSON, L. L.: Admiral Bailey; Florida; 1863.
——— Admiral Dahlgren; Florida; 1864.
OGDEN, H. G.: Commander Davenport; North Carolina; 1864.
——— Admiral S. P. Lee; North Carolina; 1864.
OLTMANNS, J. G.: Admiral D. D. Porter; Mississippi River; 1862.
——— Capt. A. P. Cooke (commanding the *Estella*); Louisiana; 1863.
PERKINS, F. W.: Admiral S. P. Lee; Mississippi, Tennessee, and Ohio Rivers; 1864 and 1865.
PLATT, FRANKLIN: Admiral S. P. Lee; North Carolina; 1864.
PLATT, ROBERT: Admiral Du Pont; South Carolina; 1861, 1862, and 1863.
——— Admiral Dahlgren; Georgia; 1864.
——— Admiral Dahlgren; Florida; 1864.
——— Admiral Dahlgren; North Carolina (commanding steamer *Corwin*); 1865.
——— Admiral Dahlgren; South Carolina; 1864 and 1865.
ROCKWELL, C.: Admiral Du Pont; South Carolina; 1862.
SENGTELLER, L. A.: Admiral Bailey; Florida; 1863.
——— Admiral Dahlgren; South Carolina; 1863, 1864, and 1865.
STRAUSZ, A.: Admiral D. D. Porter; Mississippi River; 1862 and 1863.
——— Commander Davenport, on gunboat *Commodore Hull;* watch duty; 1864.
——— Admiral S. P. Lee; North Carolina; (commanding schooner *James Hall*); 1864.
TALCOTT, R. H.: Admiral Du Pont; South Carolina and Georgia; 1863.
WEBBER, F. P.: Admiral Dahlgren; South Carolina; (commanding schooner *Bailey*); 1864.
WETHERILL, A. M.: Admiral Bailey; Florida; 1863.
——— Admiral Lee; North Carolina; 1864.
——— Admiral Dahlgren; North Carolina; 1865.

Appendix 2.—DETAILS OF COAST SURVEY PARTIES ENGAGED IN SURVEYING OPERATIONS FOR ARMY AND NAVY, 1862 AND 1863.

SEASON ENDED JUNE, 1862.

Section.	Locality.	Under immediate command of—	Names of assistants, aids, etc.	Service.
III	Accomac County, Va....	Gen. H. H. Lockwood...	A. M. Harrison and H. W. Bache.	Topography and hydrography.
III	.....do.....	.....do.....	Chas. Hosmer and F. A. Luber.	Topography.
III	Yorktown, Va., and peninsula above.	Gen. G. B. McClellan (Gen. A. A. Humphreys).	F. W. Derr and J. W. Donn.	Do.
III	York River, Va., and Pamunkey and Mattapony Rivers (steamer Corwin).	Admiral L. M. Goldsborough.	T. S. Phelps, Chas. Junken, S. B. Minor, W. D. DuBarry, W. Buttrick, E. L. Taylor, E. L. Brady, and R. B. Swift.	Reconnoissance and naval duty with boats and armed crews.
III	Fredericksburg, Va.....	Gen. Irvin McDowell (Col. J. N. Macomb).	C. M. Bache and T. W. Robbins.	Topography.
III	Manassas Junction, Va..	Gen. Irvin McDowell....	H. L. Whiting and C. M. Bache.	Do.
III	Potomac River, Maryland and Virginia (schooners Cobb and Dana).	Request of Navy Department.	Prof. Fairman Rogers, F. P. Webber, Chas. Ferguson, Chas. Hosmer, H. L. Whiting, A. W. Longfellow, John Mechan, R. E. Halter, and Chas. Hosmer.	Triangulation and topography.
IV	Oregon Inlet and Neuse River, N. C. (schooner Bancroft).	Gen. A. E. Burnside (Gen. J. G. Foster).	Henry Mitchell, A. S. Wadsworth, Edward Cordell, and C. P. Dillaway.	Hydrography.
IV	Beaufort Harbor, N. C. (schooner Joseph Henry).	By request of Navy Department.	Albert Boschke, Chas. Heyne, and E. H. Courtenay.	Do.
V	Port Royal, S. C., and other harbors of South Carolina and Georgia (steamer Bibb and schooners Caswell and Arago).	Admiral S. F. DuPont..	C. O. Boutelle, E. Willenbucher, Robert Platt, C. French, C. H. Boyd, J. S. Bradford, and C. L. Bixby.	Do.
V	Broad and Beaufort Rivers, Skull Creek, and Calibogue Sound, S. C., and Stono River.	.....do.....	W. S. Edwards.....	Do.
V	Islands above Beaufort, S. C.	.....do.....	W. H. Dennis.....	Topography.
V	Port Royal Island, S. C..	Gen. I. I. Stevens.....	Cleveland Rockwell and W. W. Harding.	Do.
VI	Florida reefs and keys...	Gen J. M. Brannan.....	Geo. Davidson, W. B. McMurtrie, A. Strausz, A. R. Fauntleroy, C. T. Iardella, C. Fendall, L. L. Nicholson, G. A. Fairfield, and A. T. Mosman.	Hydrography, topography, and triangulation.
VIII	Mississippi River and Mobile Bay (steamer Sachem).	Admiral D. G. Farragut (Commodore D. D. Porter).	F. H. Gerdes, J. G. Oltmanns, J. S. Harris, and T. C. Bowie.	Triangulation, topography, and hydrography.
VIII	St. Louis, Mo.....	Gen. W. H. Halleck.....	John Mechan.....	Topography.
VIII	.....do.....	Col. R. D. Cutts.....	R. M. Bache.....	Do.

BETWEEN JUNE AND NOVEMBER, 1862.

III	Williamsport, Md.....	Gen. W. B. Franklin....	John Mechan.....	Topography.
III	Bladensburg, Md.....	Col. J. N. Macomb.....	C. M. Bache and T. C. Bowie.	Do.
III	Defenses of Washington.	Gen. J. G. Barnard.....	J. G. Oltmanns.....	Do.
III	Fairfax County, Va.....	Col. J. N. Macomb.....	T. W. Robbins.....	Do.
VIII	St. Louis, Mo.....	Col. R. D. Cutts.....	R. M. Bache.....	Do.
I	Environs of Portland, Me.	For use of Engineer Department.	F. W. Dorr.....	Topography reconnoissance.
I	Narragansett Bay, R. I.	Navy Department.....	H. L. Whiting.....	Topography and hydrography.
I	.....do.....	Navy yard commission..	A. M. Harrison.....	Topography.
I	.....do.....	.....do.....	Henry Mitchell.....	Hydrography.
II	Delaware River.....	For Navy and War Departments.	George Davidson.....	Do.

SEASON ENDED JUNE, 1863.

Section.	Locality.	Under immediate command of—	Names of assistants, aids, etc.	Service.
II	Sandy Hook	For use of Engineer Department.	H. L. Whiting, F. P. Webber, J. W. Donn, H. Mitchell, C. P. Dillaway, A. M. Wetherill, and J. W. Brown.	Topography and hydrography.
II	League Island, Pa.	For Navy Department	Geo. Davidson	Do.
III	Montgomery and Prince Georges Counties, Md.	Col. J. N. Macomb	C. M. Bache, C. Ferguson, and I. Hull Adams	Topography.
III	Prince Georges County, Md.	do	J. W. Donn, F. A. Lueber, and C. S. Hein.	Do.
III	Fortifications, Washington, D. C.	Gen. J. G. Barnard	C. A. Schott and E. H. Courtenay.	Triangulation.
III	Rosiers Bluff, Md.	do	A. M. Harrison, H. W. Bache, and A. Lindenkohl.	Topography.
III	Fairfax County, Va.	do	C. H. Boyd	Triangulation and topography.
III	Near Fort Lyon, Va.	do	C. M. Bache and T. C. Bowie.	Topography.
III	Stafford County and Fredricksburg, Va.	Gen. W. B. Franklin	C. M. Bache, P. C. F. West, and Chas. Hosmer.	Reconnoissance.
III	Coast of Maryland and Potomac River (steamer Corwin).	By request of the Navy Department.	Lieut. Commander T. S. Phelps and C. Junken.	Hydrography.
IV	Neuse River, N. C. (schooner Jas. Hall).	Gen. J. G. Foster	G. A. Fairfield and H. Anderson.	Triangulation.
IV	Craven and Beaufort Counties, N. C.	do	P. C. F. West and C. Rockwell.	Reconnoissance.
V	Winyah Bay, Charleston Bar, Port Royal, S. C., Savannah Entrance and Ossabaw, Ga. (steamer Bibb).	Admiral S. F. Du Pont.	C. O. Boutelle, J. S. Bradford, W. W. Harding, P. Frazer, jr., Robert Platt, and C. Willenbucher.	Hydrography.
V	Wassaw Sound, Ga. (schooner Caswell).	do	W. H. Dennis and R. H. Talcott.	Topography.
VI	Florida Reef and Charlotte Harbor (steamer Vixen).	Admiral Theodorus Badley.	Ed. Cordell, C. T. Iardella, T. C. Bowie, L. L. Nicholson, H. M. DeWees, L. A. Sengteller, and A. M. Wetherill.	Hydrography.
VIII	Louisiana	Gen. N. P. Banks	J. G. Oltmanns, Chas. Hosmer, and S. H. Lyman.	Topography and reconnoissance.
VIII	Mississippi and Arkansas Rivers.	Admiral D. D. Porter	F. H. Gerdes, C. Fendall, and Alexander Strausz.	Topography and reconnoissance surveys.
VIII	St. Louis	Col. R. D. Cutts	R. M. Bache and R. E. McMath.	Topography.

BETWEEN JUNE AND NOVEMBER, 1863.

VIII	Philadelphia and environs.	Gen. N. J. T. Dana; Gen. Geo. Cadwalader.	A. D. Bache, Geo. Davidson, H. L. Whiting, O. Boutelle, C. M. Bache, R. M. Bache, C. Rockwell, J. S. Bradford, A. R. Fauntleroy, R. E. McMath, E. Hergesheimer, and W. B. McMurtrie.	Military reconnoissance, surveys for sites, and erection of field works for defensive purposes.
VIII	Delaware Breakwater	For Engineer Department.	Capt. C. P. Patterson	Hydrography.
III	Baltimore, Md.	Col. W. F. Reynolds	J. W. Donn, A. Lindenkohl, and C. H. Boyd.	Topography and triangulation.
IV	Near Fort Lyon, Va.	Gen. J. G. Barnard	C. M. Bache and T. C. Bowie.	Topography.
V	Charleston Bar (schooner Bailey).	Admiral J. A. Dahlgren.	W. S. Edwards, F. H. Dietz, and L. A. Sengteller.	Hydrography.
VIII	Chattanooga, Tenn.	Gen. U. S. Grant (Gen. W. F. Smith).	P. C. F. West, C. Fendall, F. W. Dorr, and J. W. Donn.	Topography, surveys, and reconnoissance.
VIII	Louisiana	Gen. N. P. Banks (Gen. W. B. Franklin).	J. G. Oltmanns and Chas. Hosmer.	

Appendix 3.—EXTRACTS FROM THE ANNUAL REPORTS OF THE SUPERINTENDENT OF THE COAST SURVEY COVERING MILITARY OPERATIONS OF THE SERVICE.

COAST SURVEY OFFICE, WASHINGTON, D. C., DECEMBER 15, 1863.

SERVICE WITH THE ARMY AND NAVY.

Of the surveys which were steadily carried on in the vicinity of Washington city until the end of June, that of the banks of the Potomac near Alexandria, though specially ordered for purposes of defence, and executed by Assistant Harrison, combines with the regular work of the survey, as does also the triangulation of the river between Alexandria and Georgetown by Sub-Assistant Boyd. The topography of the eastern approaches to the District of Columbia has been extended by Assistant Adams, Sub-Assistant Ferguson, and Mr. Donn, and the survey near Fort Lyon by Assistant C. M. Bache. Sub-Assistant Boyd made a triangulation, and Mr. Donn took up the topography of the approaches to Baltimore, in the latter part of June, at the special call of the authorities charged with the defences of that city. This work has been suspended within a few days by the emergency which requires topographical service near Chattanooga, but will be completed as soon as practicable, as will also the plane-table surveys in the neighborhood of Washington. The heights of all the field-works near the capital have been determined and furnished to the chief engineer of defences.

The services at Port Royal and at the mouths of the Mississippi, referred to in my last report, have been followed up this year in the military department of North Carolina; on the coast of South Carolina and Georgia, particularly near Charleston, and at Tybee and Wassaw; in Louisiana, west of the Mississippi; and in the Mississippi and Yazoo rivers, during the sieges of Vicksburg and Port Hudson. In the first-named department, besides the triangulation of part of Neuse river by Assistant Fairfield, reconnaissance maps were made by Assistant West and Sub-Assistant Rockwell, while the enemy threatened Newbern and Little Washington. Charleston bar was surveyed by night, and lighted and buoyed by Assistant Boutelle with the steamer *Bibb*, just previous to the naval attack of April last. Port Royal bar was resurveyed by his party, and the buoys needed there and at the other entrances on the coast of South Carolina and Georgia were set, and have been properly marked on the charts which are supplied from the office for the blockading squadron. A hydrographic reconnaissance was made by the *Bibb*, in December, of the channel into Winyah bay, under the orders of Admiral DuPont. In returning from duty at the same station, in February, the *Bibb* took in tow one of the steam transports of General Foster, which had burst her boilers within twenty miles of the hostile shore, and delivered the vessel at Hilton Head. Mr. Boutelle also accompanied the engineer of the Light-house Board for determining the aids to navigation needed for the naval service between Port Royal and St. John's river, Florida.

Assistant Edwards, in this section, sounded out two important branches of the inland passage between St. Helena and Port Royal sounds; examined the channels into Tybee roads; and pushed the hydrography of Wassaw sound, for which shore-line was furnished by a party under Sub-Assistant Dennis. Mr. Talcott, of the topographical party, narrowly escaped capture while working on Little Tybee island.

Six parties were actively and constantly engaged during an average period of about six months of the present surveying year on the coast of North Carolina, South Carolina, and Georgia, and their labors are warmly commended in communications to me from Major General Foster and Admiral DuPont.

At the request of the tax commissioners of Florida, one of the most active of the Coast Survey topographers was assigned to serve under their orders at Fernandina and St. Augustine. His services during the ensuing winter were prospectively called for by the commissioners, but, under a pressing call received from Chattanooga, within a few days, he has been assigned to topographical duty for the army of Major General Rosecrans. Three others, Assistant West, Sub-Assistant Rockwell, and Mr. Donn, are under orders for duty there, in compliance with the application.

Sub-Assistant Dorr, while in service with the tax commissioners, supervised the erection of additional earthworks at Jacksonville, Florida, when that place was reoccupied by the government forces in March last.

Under the protection afforded in the vicinity of Admiral Bailey's blockading vessels, the hydrography outside of the Florida keys has been completed within the year by a party under Acting Assistant Cordell, with the steamer *Vixen*. The same party sounded the main entrance and approach of Charlotte harbor. Both these surveys are in continuation of previous work, and fall into place with the regular progress of the Coast Survey.

In connexion with the military and naval operations on the Mississippi river and in Louisiana, three topographers have served with the army of Major General Banks, (Assistant Oltmanns, Sub-Assistant Hosmer, and Mr. Lyman,) and two, Sub-Assistant Fendall and Mr. Strausz, under the direction of Assistant Gerdes, with the fleet of Admiral Porter, and subsequently with the army of Major General Grant. A minute topographical survey of the west bank of the Mississippi opposite to New Orleans for defensive purposes; reconnaissance maps of the middle districts of Louisiana and of the Red river as far up as Alexandria; the topography of the approaches to Vicksburg while the siege was in progress, and the survey of those of Port Hudson after the surrender of that post, are part of the results of their labors.

The high terms of approval used by Admiral Porter in reviewing the arduous duties and progress of the parties assigned to service with his fleet have induced me to renew the surveying force on the Mississippi during the coming season. Both of the topographers before assigned kept the field until entirely disabled by sickness in the latter part of July, after the surrender of Vicksburg. Their work had been repeatedly pushed forward in the presence of the enemy, as was also that of the parties with the army of General Banks. Assistant Oltmanns, on reconnaissance duty before Port Hudson, had his horse killed by a rebel shot, and previously, himself and Mr. Lyman being on board of the gunboat *Kinsman*, were in imminent peril when that vessel snagged and went down in the Atchafalaya with a number of the soldiers on board. Mr. Oltmanns has continued in service in the military department of the Gulf during the entire year. Mr. Hosmer, having closed surveying duty assigned at the north, has been reassigned to service with the army of General Banks. These and similar arrangements are detailed in my report, together with the changes in disposition in the transfer of officers of the survey from the east and north to the south. The transfers are also shown by lists in the Appendix, Nos. 27 and 28. The minute survey of the approaches to the defensive works near St. Louis, and of the ground which they occupy, has been completed, and the sheet turned in, by Assistant R. M. Bache.

During the invasion of the State of Pennsylvania last summer, and in view of the possible danger of the city of Philadelphia, I volunteered my services, under your authority, to the governor of Pennsylvania, and, by his request, was associated with the military and civil authorities in charge of the defences, as chief engineer. The exigency was pressing, as was proved by the efforts to procure regular engineers for this work, and by the failure even to obtain officers for consultation. The character of my association, first with Major General Dana, and, since August, with Major General Cadwalader, in command of the post of Philadelphia, was such as to add a relish to the labor. The circumstances of alarm, too, occasioned by the progress of the enemy, though soon passed, were attested most substantially by the number of volunteers for active service from the citizens, even the reverend clergy taking part, enthusiastically, for their home defence; retired officers of the regular army and of the volunteers came forward with officers of the Coast Survey, those of the railroads centering at Philadelphia, officers and members of the municipal bodies of the city and graduates of the institutions of learning.

The surveys made under my immediate direction for the defences of Philadelphia have occupied Assistants H. L. Whiting, George Davidson, R. M. Bache, and C. M. Bache, and at the outset of the work, Assistants C. O. Boutelle and P. C. F. West, the last-named having been just previously in military service with the division of General W. F. Smith, at Carlisle, Pennsylvania; Sub-Assistants R. E. Halter, Cleveland Rockwell, and J. S. Bradford, also assisted in the work.

Having occasion to discuss the river maps extending to tide-water with one of the generals-in-chief of our armies, I received the gratifying assurance that he could not have arranged the plans for the operations of the army without the use of those maps. This strong expression was coincided in by an admiral of

high distinction then engaged in the interior of several adjacent States. I would propose to make this network of the rivers more complete by passing above tide-water, and by the help of observations of latitude and of telegraphic longitudes, effected partly in past years, to lay the basis for a connected map.

During the progress of the year new and highly gratifying testimonials have been spontaneously rendered by officers in the military and naval service to the value of the maps, charts, and memoirs prepared by the Coast Survey, in facilitating the important operations with which they have been charged. Naval commanders have pronounced these aids to be invaluable in promoting the efficiency of the blockade and in securing the safety of the blockading vessels; and the commanders of military departments and generals in the field have, directly and through their engineer officers, repeatedly expressed to the Superintendent their high sense of the usefulness to their commands of the maps of their several fields of operations, which have been prepared at the office of the survey. Besides the regular publications of the survey, maps of the localities of the different expeditions, sieges, &c., have been prepared for popular use.

The operations just mentioned have been executed by the civilians of the Coast Survey; all of the naval officers but one, and all the army officers, having been detached from service with us.

As during last year the means of usefulness, and not the opportunities, have limited the range of our parties.

No losses of vessels or other property, excepting by ordinary wear, have been encountered during the year. The two vessels seized at Charleston in the winter of 1860–'61 have, however, been destroyed; the schooner Petrel by a broadside from the United States frigate St. Lawrence, and the tender Fire Fly by fire at Savannah.

(CAMBRIDGE, MASS., OCTOBER 26, 1864.)

SERVICE WITH ARMIES AND BLOCKADING SQUADRONS.

The survey has been kept in full co-operation with the blockading squadrons, and with the armies of the Union, as heretofore. In the vicinity of Baltimore the survey of ground connected with the defences has been continued by Sub-Assistant Iardella, and during part of the season by Assistant C. M. Bache. The topography of the approaches to the capital has been further extended beyond the northeast boundary of the District of Columbia, by Sub-Assistant Ferguson. A minute topographical survey has been made of Arlington Heights by Messrs. Hergesheimer and McMath for the War Department, and special determinations for the effective use of heavy artillery at Washington, New York, and Boston, by Assistant Schott. Sub-Assistant Donn is now engaged in surveying the approaches to the fords of the Potomac above and below Harper's Ferry. In West Virginia the latitude and longitude have been determined at eleven military posts by Assistant Dean and Sub-Assistant Mosman, and the magnetic variation at most of them by Mr. S. H. Lyman. At Clarksburg, Virginia, Mr. Lindenkohl assisted in compiling the military map of West Virginia, and computed the latitude of numerous points from the sextant observations of the late Lieutenant J. R. Meigs, formerly chief engineer of the department. Sub-Assistant Rockwell, before making a plane-table survey of Strawberry Plains and of the city of Knoxville and its defensive works, in which duty he was associated with Mr. R. H. Talcott, was engaged in similar service at Sewall's Point, Virginia. Assistant West, after reconnaissance duty, which terminated with the battle of Missionary Ridge, Tennessee, was in the same way employed at Bermuda Hundred, Virginia. Sub-Assistants Dorr and Donn made plane-table surveys of the environs and defences of Nashville and of Chattanooga, Tennessee, previous to the repulse of the enemy in the south approach to that city; and Mr. Donn, in conjunction with Mr. Marindin, afterwards rendered similar service for the army near Petersburg, Virginia. Sub-Assistant Boyd has made a complete survey of the battle-field of Chickamauga, Georgia, and is now under orders to rejoin the army at Chattanooga.

In connexion with the North Atlantic blockading squadron, Mr. Strausz, and subsequently Mr. Cordell, have made resurveys of the bar and channel into Beaufort harbor, North Carolina. The last-named officer sounded the harbor, and the entire channel which leads from Beaufort through the straits and through Core sound, marking also its course by buoys and stakes. The same parties reset the buoys between the bar and Fort Macon to conform to the changes found by the resurveys. Mr. Strausz also made a resurvey of Hatteras

inlet, and sounded out a stretch of six miles of the Neuse river below New Berne, marking the channels in both localities by buoys. The triangulation of the Neuse river was at the same time continued by Assistant Fairfield. Sub-Assistant Halter made a triangulation and shore line survey of Croatan sound, and of Roanoke river, North Carolina, above and below Plymouth. These waters were thoroughly sounded by Sub-Assistant Bradford, and the channel through the latter was marked by spar-buoys. He has since sounded Trents' Reach, in James river, Virginia, and is now engaged in the survey of Bogue sound. A careful reconnaissance of the Cape Lookout shoals has been made by Lieutenant Commander Phelps with the surveying steamer Corwin.

Attached to the South Atlantic blockading squadron, and for service also with the military forces, three parties with the surveying steamer Vixen, and schooners Bailey and Caswell, were assigned. Assistant Boutelle, besides the complete development of the channels at present leading into Charleston harbor, in which also Assistant Edwards was engaged during part of the season, reset the buoys, and prepared new sailing directions. Under his direction Folly river and Light-house inlet have been sounded by Sub-Assistant Webber; the hydrography of Wassaw sound has been continued, and a resurvey made of the bar and channel of the St. John's river to a point near Mayport Mills. As heretofore, his party in the Vixen, in charge of Acting Master Platt, performed the pilot service required for the vessels of the South Atlantic squadron. Sub-Assistant Dennis made surveys for defensive works at Palatka, Florida, extended the survey of the St. John's river above Jacksonville, and during the military movements in that vicinity made a reconnaissance of the roads leading towards St. Augustine, Picolata, and Mayport Mills. At Port Royal he surveyed Bay Point and Land's End for naval purposes, and on Morris and Folly islands surveyed the shore lines of the inland passage between Light-house inlet and Folly river. Mr. McMath was on service with the United States tax commissioners for Florida, at Fernandina and at St. Augustine. He also furnished for military use a copy of the county map, showing the interior of Florida beyond Jacksonville.

In the military department of the Gulf, Assistant Oltmanns served on the staff of Major General Franklin, and made surveys along the route of the 19th army corps, including the environs of Vermilionville Opelousas, Washington, and Franklin, Louisiana. Sub-Assistant Hosmer was present with the army detachment at Aransas Pass, Texas, and located the position of the rebel works on a map, after determining the changes that had taken place in the depth of water on the bar of that pass. He performed similar duty at Pass Cavallo, traced and marked the changes which had occurred at the eastern end of Matagorda island, and buoyed the channel into McHenry bayou. After joining the staff of Brigadier General Grover, in January, Mr. Hosmer made surveys at Madisonville and Morganza, Louisiana, and at Fort Adams, Mississippi. Both of these officers accompanied the army of Major General Banks through the Red river campaign.

On the Mississippi river, and for the use of the squadron under Admiral Porter, Assistant Gerdes made a topographical survey of Grand Gulf and its vicinity, and sounded the channel abreast of that post. This was followed by a reconnaissance which included the shore and channel of about fifty miles of the course of the Mississippi, between Rodney and Vicksburg. He made also a minute survey of the Ohio river and its shores from Mound City to Cairo, Illinois, with soundings relative to inquiries concerning a navy yard site. Sub-Assistant Fendall assisted in this important survey, and was afterwards on duty with the gunboats which passed up Red river to act in concert with the land forces.

The transfer of some of these parties from one locality to another, as service required, has been noticed in the abstract just given; the transfer of others therein mentioned for prosecuting the usual work of the survey will appear in the short summary which follows.

COAST SURVEY OFFICE, WASHINGTON, D. C., DECEMBER 16, 1865.

PROGRESS DURING THE SURVEYING YEAR 1864–65.

The following is a brief sketch of the progress made during the past year. While the war continued, a number of parties were connected with government commands, and rendered efficient aid in naval and military operations, as during the preceding years.

Four parties were attached to the South Atlantic blockading squadron, so as to be available also for service in the military departments of the south. The labors of these comprise a complete resurvey of the bar and channels leading into Charleston harbor; a survey of the inside water passages between St. Helena and Port Royal sounds, and a survey of Broad river and the Whale branch to Port Royal ferry; of the Wilmington and Thunderbolt rivers, and other communications between the Savannah river and Ossabaw sound, including among them the dependencies of Wassaw sound; a survey of the rebel defences of Charleston and Savannah, the latter embraced within an extended reconnaissance of all the approaches to that city. In this same district, and under instructions of the Light-house Board, the parties have replaced lights, beacons, and buoys, as their places were re-occupied by the national forces. The entrance to Darien was examined and buoyed, for the transportation of released Union prisoners.

Four topographers of the coast survey accompanied General Sherman's army in the march from Savannah to Goldsboro', and rendered effective aid in making reconnaissances.

Two parties were connected with the North Atlantic blockading squadron. One of these, after assisting in the operations against the rebel defences of Wilmington, North Carolina, made a complete resurvey of both entrances to the Cape Fear river. The other relighted and buoyed the channels of that river, as also those leading into Beaufort, North Carolina, which was then important as the rendezvous of the squadron for supplies. After the close of hostilities the same party completed the hydrographic survey of the Cape Lookout shoals, and continued off-shore soundings along the coast of North Carolina.

A topographical survey of the banks of the Potomac river, from the vicinity of Washington to Harper's Ferry, has been made by a party attached to the middle military department; and two other parties have extended the detailed surveys of the approaches to Washington and Baltimore. One topographer was continued on service with the army operating in the valley of Virginia, and furnished the results of reconnaissances at Flint Hill and Cedar creek, after serving in battle at both places. Another remained on duty with the army of the Tennessee, and has mapped the defensive ground and approaches to Lookout mountain, and extended the survey of the battle-field of Chickamauga.

In connexion with the Mississippi squadron, a party of coast survey officers have made a valuable reconnaissance map of over two hundred and fifty miles of the Tennessee river, or from its mouth to the Muscle shoals; a map of the lower Ohio from Paducah to Cairo; and a map of about one hundred and fifteen miles of the course of the Mississippi river from Cairo up to St. Mary's. This work necessarily ceased when, owing to the reduction of the squadron in the western waters, a vessel was no longer available for the uses of the party. It may be hoped, however, that the great and obvious usefulness, in a national point of view, of a reliable map of the Mississippi river may lead Congress to make a special appropriation for the further prosecution of that work. A stretch of forty-five miles of the river was mapped last year above and below Vicksburg, and thus an important part of the Mississippi has already been surveyed without involving any public expenditure that would not otherwise have been incurred.

Appendix 4.—OFFICIAL LETTERS AND DOCUMENTS COVERING THE MILITARY AND NAVAL SERVICE RENDERED BY THE COAST SURVEY DURING THE CIVIL WAR, 1861–1865, ARRANGED IN CHRONOLOGICAL ORDER.

ENGINEER OFFICE, FORT JEFFERSON,
Harbor of Tortugas, February 1, 1861.

PROF. A. D. BACHE,
Superintendent U. S. Coast Survey,
Washington, D. C.

MY DEAR SIR: I presume that we shall have vessels of the Navy coming here from time to time until this breeze blows out.

One, the *Macedonian*, is here already and I find that in giving information needed by her officers, the charts sent to me lately from the Coast Survey are useful.

Would it not be well to place at this point a good supply for Naval uses and perhaps also for merchant vessels.

I look for this to be the Custom House of the Gulf, the place to collect the revenue formerly paid at New Orleans, Mobile, Pensacola, and other places now in the hands of the disaffected.

I want several copies of the charts of Key West and Pensacola particularly, for my own use. There are none upon the U. S. Mail Schooner *Tortugas*.

I am, Truly and Respectfully, &c.,

M. C. MEIGS,
Capt. of Engineers.

The Brooklyn merchant Key West will be here tomorrow.

TREASURY DEPARTMENT, *February 4, 1861.*

PROF. A. D. BACHE,
Supt. Coast Survey,

SIR: You will please make such arrangements as you may deem proper for the safety of the vessels engaged in the Coast Survey. The most valuable, if seaworthy, should, I think, be ordered to New York, and might, as you suggest, be reached by special messenger. No reliance should be placed on the forbearance of the States on the Gulf of Mexico.

Respectfully yours,

JOHN A. DIX,
Secretary of the Treasury.

WASHINGTON, *March 31, 1861.*

DEAR SIR: Having received an appointment in the Marine Corps, I beg leave to tender my resignation from the Coast Survey, the which I do with deep regret, severing as it does associations of so agreeable a nature, that will ever be remembered with an affectionate pride.

With many thanks for the considerations shown me by the Gentlemen with whom I've been connected whilst on the work and to yourself for your many acts of kindness, allow me to express the hope that your life may be as long and happy, as it has ever been useful.

With great respect Your obedient servant,

McLANE TILTON.

Prof. A. D. BACHE
Superintendent U. S. Coast Survey, Washington.

COAST SURVEY OFFICE, *April 19, 1861.*

DEAR SIR: I send as requested by you last evening, a list of the Coast Survey vessels, with dimensions, tec.

Yours respectfully

A. D. B., *Sup't.*

Hon. S. P. CHASE,
Secretary of the Treasury.

MONDAY EVENING, *August 26, 1861.*

MY DEAR PROFESSOR: Major Macomb desires me tc say to you that he will accept, and can employ at once, 5 or 6 parties of C. S. Assistants, on Topography—he adds they will be of much assistance to him, it being understood that they are to be subordinates to officers of the Corps of Topog. Engineers. He has directed me to organize three parties for him, with as little delay as possible, this under your instructions, I am now prepared to do.

Yours very respectfully,

W. R. PALMER,
Capt. Topg. Engineers.

Prof. BACHE.

C. S. OFFICE, *April 26, 1861.*

SIR: I have the honor to transmit for your use three proof sheets from the unfinished plates of the large C. S. Chart of Chesapeake Bay. These show the topography of the shores and the soundings between the head of the bay and the mouth of the Potomac River.

Very respectfully yours,

A. D. BACHE,
Superintendent.

His Excellency, ABRAHAM LINCOLN,
President of the U. S.

NAVY DEPARTMENT, *April 27, 1861.*

SIR: I have the honor to request that Mr. William Budd, who is connected with the Coast Survey, may be directed to report to this Department for duty.

I am, Sir, Very respectfully, Your obedient servant,

GIDEON WELLES.

Hon. S. P. CHASE,
Secretary of the Treasury.

NAVY DEPARTMENT, *April 27, 1861.*

SIR: For the purpose of aiding in carrying out the proposed blockade and protecting our commerce, I have the honor to request that the following Coast Survey vessels may be temporarily placed under the control of this Department, viz, the Steamers *Corwin* and *Bibb* and the schooners, *Varina, Crawford, Arago* and one other vessel.

I am Sir, Very respectfully, Your obedient servant,

GIDEON WELLES.

Hon. S. P. CHASE,
Secretary of the Treasury.

TREASURY DEPARTMENT, *April 30, 1861.*

SIR: I have to acknowledge the receipt of your three several letters of the 26th instant, transmitting for the use of the War, Navy and Treasury Departments, three proof sheets from the unfinished plates of the large C. S. Chart of Chesapeake Bay, showing the topography of the shores and the surroundings between Havre de Grace and the mouth of the Potomac River.

I am, very respectfully,

S. P. CHASE,
Secretary of the Treasury.

Prof. A. D. BACHE,
Superintendent Coast Survey, Washington, D. C.

COAST SURVEY OFFICE, *May 2, 1861.*

SIR: In reply to your letter of April 30th containing directions to turn over to the Navy Department, the Coast Survey Steamers *Corwin* and *Bibb*, and the Schooners *Varina, Crawford, Arago*, and one other vessel, I have the honor to state that orders will be sent by the next mail for the purpose.

Very respectfully, yours,

A. D. BACHE,
Superintendent.

Hon. S. P. CHASE,
Secretary of the Treasury.

NEW YORK, *May 2, 1861.*

MR. BLUNT: The Coast Survey vessels are placed under my orders having been transferred to the Treasury Department.

An order is required from you by the Officers of the yard to permit my officers to take such stores from the store houses at Navy Yard as may be required.

Please give the necessary directions.

Yours very respectfully,

W. A. HOWARD,
Capt. U. S. Rve.

COAST SURVEY OFFICE, *May 2, 1861.*

DEAR SIR: I enclose herewith a letter from the Secretary of the Treasury directing the turning over of the following Coast Survey vessels to the Navy Department, viz: Steamers *Corwin* and *Bibb* and the Schooners *Varina, Crawford, Arago* and one other vessel.

Please have receipts signed for the vessels, and by inventory for the things on board.

The Officer to whom the Navy Department has requested the vessels to be delivered is the Commandant of the Navy Yard at New York.

I also enclose you a copy of a letter from the Secretary of the Navy to the Secretary of the Treasury dated April 27th.

Yours respectfully,

A. D. BACHE,
Superintendent.

ED. BLUNT, Esq.,
Assistant, Coast Survey.

NEW YORK, *May 3, 1861.*

DEAR SIR: This has been my first opportunity to report to you that by special request of the Navy Department I am on my way with dispatches to Baltimore—to return immediately. I spent most of Wednesday at the Dept. in communication with the Secretary, the Chief Clerk and Comd. Paulding. My mission received unqualified approbation, and I was requested to use all dispatch with my returning instructions. I had barely time to reach my hotel and the cars, or I should have reported to you and asked for more special leave to attend to this duty, which I felt sure you would grant me, under the circumstances.

In times like these the opportunity to do special service may be worth more to the Government and to myself than years of ordinary duty, this is my only ground for acting in the matter.

Very respectfully and truly yours,

HENRY L. WHITING.

Prof. A. D. BACHE,
Superintendent U. S. Coast Survey, Washington, D. C.

ENGINEER DEPARTMENT,
Washington, May 4, 1861.

Prof. A. D. BACHE,
Superintendent, Coast Survey, Washington City.

SIR: I have the honor to return the several original topographical maps made by the Coast Survey of the Pacific Coast near San Francisco, Cal., which you so kindly furnished, and to acknowledge the obligations of this Department for the important information which they have afforded toward a military knowledge of the region which they cover. They have furnished invaluable information in regard to avenues of approach to and general topography of the country about San Francisco, which could not have been otherwise obtained except by a long and expensive survey or reconnaissance. I have also to acknowledge the many other favors this Department is under to you for the numerous maps and charts of the Coast Survey which you have lately furnished, many of which must prove invaluable in the present crisis.

With the highest respect, your most obedient,

JOS. G. TOTTEN,
U. S. Engineers.

TREASURY DEPARTMENT, *May 4, 1861.*

SIR: Please have a suitable reconnaissance made of the Potomac River and furnish the results to the Department at the earliest practicable moment.

Yours respectfully,

S. P. CHASE,
Secretary of the Treasury.

Prof. A. D. BACHE,
Superintendent Coast Survey.

BROOKLYN, *May 4, 1861.*

DEAR SIR: I have been obliged to take from the C. S. Reports maps or rather charts of various places, and I shall be called on for more, so I beg you will send me all that you have which you think I may be called on to furnish, or advise about applying for, to the department.

When I sent the Telegram, and up to the 21st ult., no one appeared to know where to look for information as to the routes to be pursued, in case the R. R. from Baltimore to Washington was destroyed. I knew the route of the British survey up the Patuxent and the danger of the Potomac River in case the points below Mt. Vernon were fortified, and wrote a letter to be signed by the Gov. asking for what was then wanted. Please place me in a position to furnish or inform others what to ask for.

Yours respectfully, EDMUND BLUNT.

A. D. BACHE Esq.,
Superintendent Coast Survey, Washington.

C. S. OFFICE, *May 7, 1861.*

DEAR SIR: I enclose herewith a copy of a letter received to-day from the Hon. Secretary of the Navy, relative to the deliveries of C. S. Schooners *Varina, Crawford* and *Arago* to the Commandant of the New York Navy Yard.

Please execute the directions.

Yours respectfully, A. D. BACHE,
Superintendent.

ED. BLUNT Esq.,
Assistant, U. S. C. S., New York.

TREASURY DEPARTMENT, *May 7, 1861.*

SIR: I am advised by the Secretary of the Navy, under date of the 6th instant, that the Commandant of the Washington Navy Yard has been instructed to place at the disposal of this Department for a few days the Steamers *Mount Vernon* and *Anacostia.*

I am, very respectfully, S. P. CHASE,
Secretary of the Treasury.

Prof. A. D. BACHE,
Superintendent Coast Survey, Washington, D. C.

NAVY YARD, BROOKLYN, N. Y., *May 9, 1861.*

Received from Prof. A. D. Bache, Superintendent U. S. Coast Survey the Surveying Schooners *Varina, Crawford* and *Arago* with their equipments as per inventories, by order of the Hon. Secretary of the Navy.

SAML. L. BAUSE,
Commandant.

ENGINEER DEPARTMENT,
Washington, May 9th, 1861.

Prof. A. D. BACHE,
Superintendent Coast Survey, Washington, D. C.

SIR: I have the pleasure of acknowledging the further favor from your office of a copy of the original plane-table survey of the entrance to Hampton Roads and Back river, including the locality of Fort Monroe, Va.

This map supplies information much needed at this time, which it would have been impracticable to procure without much expense and delay, otherwise than through your office.

The cost of preparing the copy of the map ought to be borne by the Engineer Department, and I have therefore to request that the account for the same be sent to this office for payment.

Very respectfully, Your Obdt. Servant,

JOS. G. TOTTEN,
U. S. Engineers.

COAST SURVEY OFFICE, *May 9, 1861.*

SIR: Mr. John Mechan of the U. S. Coast Survey, desiring to change his personal occupation for the Military service, I have the honor to testify to his faithfulness in the discharge of his duties and to his high qualifications as a topographer and a man of business. His early education having been directed to the military service, I doubt not he will prove useful as a soldier as he has an officer of the Coast Survey. His physical strength and health are excellent. Of his judgment and intelligence you have been able to judge personally.

Very respectfully yours,

A. D. B., *Superintendent.*

Hon. S. P. CHASE,
Secretary of the Treasury.

NEW YORK, *10 May, 1861.*

SIR: Your instructions of the 7th were received yesterday. I had previously reported the names of Vessels belonging to the Coast Survey I had taken possession of. All property not appertaining to the sailing of the vessels, has been transferred to the Coast Survey Store House in Brooklyn Navy Yard.

At an early date I will select such further vessels as may be necessary for temporary service, to supply the deficiencies—report the names and number, asking further instructions from the Department.

I have the honor to be Sir, Very resp Yr Obt Servant,

W. A. HOWARD,
Cap' U. S. R. M.

Hon. S. P. CHASE,
Secretary of the Treasury, Washington, D. C.

COAST SURVEY OFFICE, *May 13, 1861.*

SIR: I have the honor to forward herewith a communication from Lieutenant Commanding J. C. Febiger, U. S. N., Assistant Coast Survey, addressed to the Honorable Secretary of the Navy, requesting to be detached from the Coast Survey and would respectfully request that it may be transmitted to the Navy Department with your approval.

Lieut. Febiger is a very able officer, zealous, steady and intelligent, and is from the West (Ohio) where he desires to be employed if Naval operations are to be undertaken in the rivers.

Very respectfully, Yours

———— ————,
Superintendent.

Hon. S. P. CHASE,
Secretary of the Treasury.

NAVY DEPARTMENT, *May 20, 1861.*

SIR: The following extract from a letter addressed by Lieut. James M. Gilliss, Supdt. of the Observatory at Washington, to the Chief of the Bureau of Ordnance & Hydrography, has been communicated to this Department by the latter; viz.

"This prompt compliance with my request by Professor A. D. Bache, the cordial and earnest zeal he has manifested to supply the unusual demand upon this office for charts published by the U. S. Coast Survey, and his offers to provide tracings and lithographs of partially completed sheets that may be of great utility to the Coast Squadron, I respectfully desire may be made known to the Honorable Secretary of the Navy."

I have the honor to request that you will communicate to Professor Bache this Department's appreciation of his zeal and services spoken of.

I am, respectfully, Yr. Obt. Svt.

GIDEON WELLES.

Hon. S. P. CHASE,
Secretary of the Treasury.

TREASURY DEPARTMENT, *May 23, 1861.*

SIR: I transmit herewith, to be forwarded immediately to Lieut. John C. Febiger, U. S. N., an order of the Secretary of the Navy, dated the 22d instant, detaching him from the command of the C. S. Schr. *Arago* and directing him to report to Commodore Breese at New York for duty on board the Sloop of War *Savannah*.

I am, very respectfully,

S. P. CHASE,
Secretary of the Treasury.

Prof. A. D. BACHE,
Supt. of the Coast Survey.

COAST SURVEY OFFICE, *27 May, 1861.*

DEAR SIR: I have the honor to submit a field sheet of topographical details on the west side of the Potomac opposite Washington and Georgetown.

The basis of this map is from the survey made by order of Gen. Washington in 1808(?) which has been brought to the scale of two inches to one mile by the photographic process of the Office. A photographic reduction to the same scale has been made by the Navy Department of the Potomac and Branch from Alexandria to Long Bridge. The lines of this last survey are traced in lead on the accompanying sheet. Ten points—mostly houses and conspicuous buildings—on the opposite side of the river have been determined, approximately, from stations occupied at Insane Asylum, Capitol Dome, and Georgetown Heights (McKinleys). A sketch of these points, as seen from the stations occupied, are given in a note-book accompanying this map.

These results are not given as finished field work from the Coast Survey, but an Office preparation for a general reconnaissance from such material as could be made immediately available.

The points determined on the opposite shore are intended as approximate bases for further determinations and to test local contour, etc.

Very respectfully yours,

HENRY L. WHITING.

Prof. A. D. BACHE.

COAST SURVEY OFFICE, *May 30, 1861.*

DEAR GENERAL: I send with this an abstract of a paper by Prof. Guyot on the Mountain chains of the U. S. with a map which represents the facts perspicuously.

Also the printed memoir of Prof. Guyot with his map.

Will you be so good as to let one of your Aids acknowledge receipt as I fear that our communications may be uncertain.

When you come this way, or now if there are any maps which we have that will assist you they shall be sent.

Yours truly and respectfully,

———— ————,
Superintendent.

Gen'l MCCLELLAN, U. S. A.

COAST SURVEY OFFICE,
Washington, May 31, 1861.

DEAR GENERAL: I send with this a remarkably clear map of the Baltimore and Ohio R. R. and the tributary roads which in your hands will I doubt not be of public utility.

Yesterday I sent you a copy of an abstract of Prof. Guyot's memoir and of a map prepared in this office illustrating it, also of the Professor's memoir and map.

Hope these papers may reach you safely.

Yours very respectfully,

A. D. BACHE.

Gen'l G. B. MCCLELLAN, U. S. A.

TREASURY DEPARTMENT, *June 8, 1861.*

SIR: I have to inform you that, so soon as the Steamer *Vixen* can be relieved in her present duty, she will be at the service of the Coast Survey, of which you will be duly advised.

I am, Very respectfully,

S. P. CHASE,
Secretary of the Treasury.

Prof. A. D. BACHE,
Supt. Coast Survey, Washington, D. C.

BUREAU OF TOPOGRAPHICAL ENGINEERS,
Washington, June 17, 1861.

Prof. A. D. BACHE,
Superintendent Coast Survey, Washington, D. C.

SIR: I have to acknowledge receipt of your letter of the 15th instant, sending for the use of the Bureau, copies of notes on the Coast of Delaware, Maryland and Virginia, and on the Rappahannock, York and James Rivers, accompanied by charts of the several localities. For these valuable acquisitions to the archives of the Bureau, I beg leave to tender you my thanks.

Very respectfully, Your Obdt. Servant,

HENTMAN BACHE,
Maj. Topg. Engs. Bureau.

THE STATE OF OHIO,
EXECUTIVE DEPARTMENT,
Columbus, June 20, 1861.

DEAR SIR: Colonel S. A. Gilbert has been called to Washington on duties connected with the Coast Survey, to which he has been for some time attached. Having appointed him Lieut. Colonel of the 24th Regiment Ohio Volunteers for the war I am very anxious he should be given such a furlough as will allow him to hold and execute the duties of that post. If the nature of the service is such that a furlough, as desired, can be given him, I will be much obliged if you will use your influence to have it granted. Colonel Gilbert is much needed in the place to which I have appointed him.

Very respectfully,

W. DAVIDSON.

Hon. S. P. CHASE,
Secretary of Treasury, Washington, D. C.

C. S. OFFICE, *21 June, 1861.*

DEAR SIR: I write a word to report my progress in field work across the river. Col. Heintzelman and Capt. Wright were exceedingly gratified at the results I gave them on Wednesday eve. I told Capt. Wright that Mr. Dorr would take up any locality that he desired. Col. Heintzelman seemed much pleased at this and said if they required any out road to be run they would furnish all the necessary protection, etc. I communicated these matters to Mr. Dorr.

Saturday eve Mr. Rockwell came in to report to me and he said Capt. Whipple was desirous to have him accompany the outposts and survey such approaches, ect. as were now more important than the localities inside the lines. I directed Mr. Rockwell to accede to Gen. McDowell's or Capt. Whipple's demands at once, asking of course for proper and ample protection.

I shall take over to Gen. McDowell this evening a full copy of our work, including Mr. Rockwell's results up to last eve. He (Mr. R.) did not make a full day's work yesterday, as the troops were under marching orders, and they could not give him the men.

I hope I have done right to order the gentlemen to move right on with the advanced positions of the army, without waiting for any general order from you.

Very respectfully yours,

HENRY L. WHITING.

Prof. A. D. BACHE,
Superintendent, Brevoot House, N. Y.

[Telegram.]

Washington June XXI st. Prof. A. D. Bache. Supt. U. S. C. S. Brevoort House. NY. Have ordered Dorr to advance from Alexandria under Capt. Wright. Rockwell from Arlington under Capt. Whipple. Gen Tyler sends express for a party with his outpost near Vienna. I would advise telegraphing for Mechan immediately. The necessity may be temporary but it is urgent. Will you order Mechan if approved.

H. L. WHITING.

[From copy.]

TREASURY DEPARTMENT, *25 June, 1861.*

SIR: I transmit herewith original communication of the 24th instant from the Secretary of the Navy, with the request that the suggestions of the Secretary be complied with.

Very respectfully yours,

S. P. CHASE,
Secretary of the Treasury.

Prof. BACHE, *Coast Survey.*

[Marked copy. Confidential.]

NAVY DEPARTMENT, *June 24, 1861.*

SIR: This Department desires to confer with the Superintendent of the U. S. Coast Survey, in order to obtain some information, that may tend to promote the efficiency of the Blockading Squadron. I have therefore to request that he may be directed to meet Capt. S. F. DuPont, U. S. N., in conference for this purpose.

I am respectfully, Your Obedt. Servt.,

GIDEON WELLES.

Hon. S. P. CHASE,
Secretary of the Treasury.

TREASURY DEPARTMENT, *July 12, 1861.*

SIR: The Collector of Customs at Philadelphia having reported the unfitness of the *Geo. M. Bache* for the uses of the Revenue Cutter Service, she will await your order at the Navy Yard at Philadelphia.

You will please make the necessary arrangements to take possession of her.

I am, very respectfully,

S. P. CHASE,
Secretary of the Treasury.

Prof. A. D. BACHE,
Superintendent Coast Survey, Washington, D. C.

[Private.]

PORTSMOUTH, R. I., *July 19, 1861.*

DEAR SIR: I have learned that several Coast Survey officers have been ordered on war duty. If any further demand should be made upon you to furnish officers for either topographical or reconnaissance duty, will you be so kind as to consider me an applicant?

Should the opportunity for me to serve on such duty occur, I am sure you will have no cause to regret sending me.

Very respectfully your obdt. servt.,

PRESTON C. F. WEST.

Prof. A. D. BACHE,
Superintendent U. S. Coast Survey.

BALTIMORE, *July 27, 1861.*

DEAR SIR: I received by yesterday's mail your letter of the 24th in relation to the steamer *Hetzel*—I wrote some days ago to have the transfer regularly made and suppose the great pressure of business on the Department has prevented it from being attended to. I will write again to my brother on the subject.

The repairs of the *Hetzel* are rapidly progressing and we find all below the water line perfectly sound. It is not contemplated to make any alterations in the arrangements of the vessel except for two small brass guns aft and one pivot gun forward. Mr. Reader is making a new boiler and repairing the machinery which is not much out of order. I think the vessel will be an efficient one for coast guard and Revenue purposes, and when we have "conquered a peace" will be valuable for Coast Survey purposes. I am having the repairs done by day's work, which has given employment to many worthy mechanics who were much in need.

I shall retain for Coast Survey use most of the furniture of the vessel unless otherwise directed by you.

I remain very respectfully, Your obedient servant,

GEO. D. WISE.

Prof A. D. BACHE,
Superintendent, U. S. Coast Survey, Washington, D. C.

C. S. OFFICE, *August 5, 1861.*

SIR: The Navy Department having expressed its wish to use the Coast Survey Steamer *Vixen* temporarily, I would respectfully request authority to loan the vessel.

Very respectfully Yours

A. D. BACHE,
Superintendent.

Hon. S. P. CHASE,
Secretary of the Treasury.

TREASURY DEPARTMENT, *August 6, 1681.*

SIR: As requested in your letter of the 5th instant, you are hereby authorized to loan the Coast Survey Steamer *Vixen* temporarily to the Navy Department.

I am, Very Respectfully,

S. P. CHASE,
Secretary of the Treasury.

Prof. A. D. BACHE,
Superintendent Coast Survey, Washington, D. C.

HEAD QUARTERS, DIVISION OF THE POTOMAC,
August 16, 1861.

Prof. A. D. BACHE,
Superintendent of the Coast Survey.

SIR: I would respectfully request that you cause you Plane Table party to make a survey of the country north of this City.

I am Sir, Very Respectfully, Your Obt. Servant,

G. B. MCCLELLAN,
Maj. Gen., U. S. A.

COAST SURVEY OFFICE, *August 17, 1861.*

GENERAL: It will give me pleasure to have the topographical map of the country north of Washington executed as requested by you.

Very respectfully yours,

A. D. BACHE,
Superintendent.

Major General MCCLELLAN, U. S. A.

COAST SURVEY OFFICE, *August 17, 1861.*

SIR: I would respectfully request authority to comply with the request of the Honorable Secretary of the Navy for the transfer of the Steamer *Hetzel* to the Navy Department.

Very respectfully yours,

A. D. BACHE,
Superintendent.

Hon. S. P. CHASE,
Secretary of the Treasury.

TREASURY DEPARTMENT, *August 17th, 1861.*

SIR: Pursuant to the provisions of the Act of August 6, 1861, entitled "An Act requiring an oath of allegiance and to support the Constitution of the United States to be administered to certain persons in the Civil Service of the United States," you are hereby directed to take the Oath or affirmation of allegiance in the form prescribed by the Act, and to cause the same to be immediately administered to the Clerks and other employees in your office. You will report any instance of refusal to take and subscribe the oath or affirmation in question. The Oaths will be transmitted for file in this Office.

I am, very respectfully,

S. P. CHASE,
Secretary of the Treasury.

To the SUPERINTENDENT OF THE COAST SURVEY.

TREASURY DEPARTMENT, *August 19, 1861.*

SIR: As requested in your letter of the 17th instant, you are hereby authorized to transfer the Steamer *Hetzel* to the Navy Department.

I am, very respectfully,

S. P. CHASE,
Secretary of the Treasury.

Prof. A. D. BACHE,
Superintendent Coast Survey, Washington, D. C.

TREASURY DEPARTMENT, *August 20, 1861.*

SIR: At the request of the Navy Department, the *Corwin* has this day been ordered to report to Flag Officer Stringham in Hampton Roads, Va.

I am, very respectfully,

G. W. HARRINGTON,
Assistant Secretary of the Treasury.

Prof. A. D. BACHE,
Superintendent Coast Survey, Washington, D. C.

COAST SURVEY OFFICE, *August 21, 1861.*

DEAR SIR: I have the honor to state that by authority of the Honorable Secretary of the Treasury, the Steamer *Hetzel* is now placed at the disposal of the Navy Department, in accordance with the request made in your letter of August 17th.

Very respectfully,

———— ————,
Superintendent.

Hon. GIDEON WELLES,
Secretary of the Navy.

[Marked copy.]

U. S. SCHOONER "ARAGO," EASTPORT, ME.
August 31st, 1861.

SIR: Under the authority given to me by the Collector of Customs for the district of Passamaquoddy, of which I enclose a copy, you are hereby placed in charge of the Ship *Orizimba* now lying at anchor in the Harbor of Eastport, Maine, and seized by the United States Government, as being owned in whole or in part by citizens of the State of Louisiana, a State now engaged in rebellion against the laws of the United States.

You will allow no person to go on board said ship, or to leave it, and no articles of any character whatever to come on board or leave the ship without permission of the Collector of Customs, given in writing, or the permission of the undersigned.

In case of any resistance to your authority or attempt to take said vessel from within the jurisdiction of the United States, you will at once call upon me for assistance, which will be promptly given you.

Yours respectfully

CHAS. O. BOUTELLE,
Commanding U. S. Schooner Arago.

W. W. HARDING, Esq.,
U. S. Coast Survey.

[Telegram.]

EASTPORT, *Sept. 2, 1861.*

Have seized and hold two (2) ships part owned in New Orleans am acting under Collector's orders more ships are expected with same owners Collector wishes me to cruise off Grand Manan and seize them. Please send orders.

C. O. BOUTELLE.

U. S. SCHOONER "ARAGO,"
Eastport, Me., September 2, 1861.

DEAR SIR: I have telegraphed to you today that under instructions from the Collector of the Port, I have seized on Saturday, and now hold the ships *Orizimba* and *Express* owned in part by Peter Marcy of New Orleans, and arriving here from Liverpool. They are seized under the confiscation act, and the President's proclamation, the fifteen days allowed having expired on Friday, the 30th instant.

I enclose a copy of the Collector's order, made today, giving me full control of the ships. The first order for seizure is in the hands of the officer in charge. A copy will be sent to you by next mail.

The ships *Alice Ball* and *Peter Marcy*, having the same owners, and hailing from New Orleans, are daily expected. The English pilots knowing of the seizures made, will keep the ships from coming here and carry them into English ports. To prevent this, the Collector wishes me to cruise off Grand Manan, and stop them. I want authority from you before doing so, and have telegraphed for it. Additional force on board is also requisite, and I feel that I have already gone to a sufficient length in stretching authority. But there is no revenue vessel here, and I hope you will approve my course.

Vessels from this place have been seized by the rebels, and there is a strong feeling in our favor in the whole matter. I will write more fully by next mail.

Yours respectfully,

CHAS. O. BOUTELLE,
Asst. C. S.

Prof. A. D. BACHE,
Supdt. Coast Survey.

COLLECTOR'S OFFICE,
DISTRICT OF PASSAMAQUODDY,
September 2nd, 1861.

To Capt. CHARLES O. BOUTELLE,
Commanding U. S. Schooner "Arago":

You are hereby instructed to employ a sufficient force to keep and protect the ships *Orizimba* and *Express.*

You are further instructed to inform the seamen on board said ships that they are at liberty to remain on board their respective vessels, so long as they render willing obedience to the orders of the officer in command, and on their refusal to obey such orders, you are instructed to discharge them from said ships.

You will to the extent of your ability keep from harm or damage the said ships, and all things to them appertaining.

Given under my hand and seal at Eastport, this second day of September, 1861.

[Seal.] WASHINGTON LONG, *Collector.*

U. S. SCHOONER "ARAGO," BAY OF FUNDY,
September 4, 1861.

DEAR SIR: I wrote you on the 2d giving an account of our seizure of the ships *Orizimba* and *Express.* I now enclose a copy of the first order of the Collector of Eastport for the seizure of the *Orizimba* marked A. A similar order was given for the seizure of the *Express.* A few hours before this occurred the Captain of the Ship *Gen. Norrell* called upon me for aid in quelling a mutiny on board his ship. I took Mr. Platt with twelve men, armed, who arrested and put in irons ten out of sixteen of the *Gen. Norrell's* crew.

I then accidentally learned that the Ship *Orizimba*, which had come in that morning had *New Orleans* on her stern and immediately went to see her register. On examining the document it appeared that Peter Marcy of New Orleans owned 3/8 of the ship. On examination at the Custom House it appeared that the fifteen days allowed in the President's proclamation had expired the day before, and the Collector gave me the order of which I enclose a copy, under which I took possession of the vessel and placed Mr. Harding in charge with four men.

I had a pleasure party of ladies and gentlemen on board this vessel, having intended the day as one of relaxation from nearly three weeks continuous labor. After disposing of the *Orizimba*, I went over to Camp Bells to pick up your friend Capt. Robinson, R. N. with his family (who have been especially civil to us). They had hardly been received on board when a message came from the Collector with information that a ship having the same owners was lying at anchor in the St. Croix near St. Andrews. I started after her, and saw a ship, evidently light, coming down the river. She proved to be the very ship we wanted. Her name is the *Express* and she has the same owners, and also ran the blockage at New Orleans in June last.

I seized her under a similar order from the Collector, and sent Mr. Platt with every available man from this vessel to unbend the sail of both vessels. Sixteen volunteers from Eastport were also employed for the same purpose. This measure of precaution was necessary to prevent parties from the English shore running the vessels into their waters.

On the evening of the 31st I received from the Collector instructions to prevent all communication between the ships and shore and gave Mr. Harding an order of which I enclose a copy marked B. A similar order was given to Lieut. J. H. Claridy U. S. R. M. (who volunteered for the service) to take

charge of the *Express*. The ships now remain at anchor at Eastport in custody of the above gentlemen, each having two men with him.

I have given you this detailed account of the whole matter as it is out of our usual line of duty and involves heavy pecuniary responsibility. You will notice that I have been careful to have written orders from the Collector for my whole action and guidance.

Yours respectfully,

CHAS. O. BOUTELLE.

Prof. A. D. BACHE,
Supt. U. S. Coast Survey.

[Marked copy.]

U. S. SCHOONER "ARAGO,"
Bay of Fundy, Sept. 4, 1861.

To ROBERT PLATT,
Executive officer U. S. Schooner Arago:

Please board the ship *Alice Ball* now hove to under our guns, and examine her register, if she proves to be owned in whole or in part by a citizen or citizens of the so called Confederate States, you will take possession of her, and take her into the Harbor of Eastport, and report you action to the Collector of Customs, and take his orders thereon.

Yours respectfully,

CHAS. O. BOUTELLE,
Commanding Schooner Arago.

[Telegram.]

EASTPORT, *September 4, 1861.*

Prof. A. D. BACHE,
C. S. Office.

Have seized ship *Alice Ball* in Bay of Fundy. She lies here with American ensign flying over Confederate flag found on board her.

C. O. BOUTELLE.

BOSTON, *Mass., 5 Sept. 1861.*

DEAR SIR: I have had quite an experience in my inquiries and endeavors to collect the original maps of Boston Harbor and Mobile Bay which you requested me to obtain and forward to you at the Office.

From Mr. Boschke I have got Nos. 229, 230, 232, 233 Topg. and 221 Hydrol. No. 178 Mr. Boschke wishes to retain for a short time longer for comparison with his work, and will forward to you as soon as he is through with it. No. 195 Topgl. is not in Mr. Boschke's possession and I think it is the sheet of "Governor's and Castle Island" returned by me to the Office with my sheets of the Islands last year. This completes the list referred to as in Mr. Boschke's hands.

The sheets of Mobile Bay (ten in number) I have been unable to obtain from the city authorities here. I was first refused by the Supt. of Faneuil Hall, then by Alderman Persten, the Chairman of public buildings, and then by the Mayor: I made all due explanation about the matter, but they seemed so reluctant to let them go that I waived further application and "compromised" the matter by going to Faneuil, collecting the maps and rolling them up ready for the Express, leaving directions with Alderman Preston for their address and transmission to you so soon as they should receive a direct *order from you* to the *Mayor* or city authorities to deliver them up.

The reference to Mr. Ricketts (who is not in very good repute here, I find, and with whom they have had some objectionable intercourse, on his part) and the fact that these maps are originals of a *Southern harbor:* seems to make them very particular, *over particular* as I told them. The arrangements I made seemed to relieve the Mayor of the ground he took and which he was evidently reluctant to hold, and the packages will be forwarded to you on receipt of your order for them.

The package I have obtained from Mr. Boschke I will forward by Express tomorrow. I would report a number of miscellaneous maps, sketches, originals,

etc., together with some drawing materials . . . beam compass, small steel ruler and brass triangle—also a number of original sounding books.

These were left by Mr. Ricketts in much disorder and were collected and cared for by the Supt. of the Building. They would be glad to forward them to the Office if ordered to do so.

Very respectfully yours,

HENRY L. WHITING.

Prof. A. D. BACHE,
Superintendent U. S. Coast Survey, Washington, D. C.

[From copy.]

NAVY DEPARTMENT, *September 7, 1861.*

SIR: The Secretary of the Treasury has been requested to continue the Coast Survey Steamer *Corwin* in the service of the Department, which, it is presumed, will be done, and on her arrival at Baltimore, you will have the repairs which may be necessary to her, executed with the greatest possible despatch.

I am respectfully, Yr. Obt. Servt.,

G. V. FOX,
Act'g Sec'y.

Lieut. T. S. PHELPS, U. S. N.,
Assist. Coast Survey.

COAST SURVEY OFFICE, *September 9, 1861.*

SIR: The bearer, Henry L. Whiting, Esq., a resident of West Tisbury, Mass., and one of the Assistants in the U. S. Coast Survey, is authorized to receive the original sheets of the survey of Mobile Bay, which are now in your charge, and to forward them to the Coast Survey Office, together with any loose data, or instruments that may have been with them when they were taken in charge.

Yours respectfully,

———— ————,
Superintendent.

His Honor, Mayor WIGHTMAN, *Boston.*

TREASURY DEPARTMENT, *September 10, 1861.*

SIR: In accordance with the request contained in your letter of the 7th instant, the Revenue Steamer *Corwin* may be continued temporarily in the service of your Department for surveying purposes at Hatteras and Ocracoke Inlets. The Revenue Officers and men now on board, including engineers, will be detached on her arrival at Baltimore and the vessel transferred to Lieut. Phelps, U. S. Navy, Asst. in Coast Survey.

I am very respectfully,

S. P. CHASE,
Sec'y of the Treasury.

G. V. FOX Esq.,
Acting Sec'y of the Navy.

[Private.]

COAST SURVEY OFFICE, *September 13, 1861.*

MY DEAR SIR: Will you please let me know at the earliest when means are found to relieve the Surveying Schooner *Arago*, which has been cruising near the N. E. Boundary, at the request of the Collector of Passamaquoddy District? and oblige,

Yours respectfully and truly,

A. D. B.

Hon. GEO. HARRINGTON,
Asst. Sec'y of Treas'y.

COAST SURVEY OFFICE, *September 14, 1861.*

SIR: I have the honor to report the seizure, under authority of law and the proclamation of the President of the United States, of three trading vessels which were found without legal clearances from either of the ports of the United States, by the Coast Survey party in the Schooner *Arago*, now employed near Passamaquoddy Bay, Me., under the charge of Assistant C. O. Boutelle. The particulars of the seizures are set forth in the following extracts from several reports addressed to me by Assistant Boutelle, in one of which mention is also made of the quelling of a mutiny on board the ship *Gen. Norrell* by the crew of the *Arago*.

"Under instructions from the Collector at Eastport, Me., I have seized and now hold the Ships *Orizimba* and *Express* owned in part by Peter Marcy of New Orleans and arriving here from Liverpool. They are seized under the confiscation act and the President's proclamation, the fifteen days allowed having expired on the 30th of August" * * *

"Yesterday morning (September 4) we went down the bay, and midway between Campo Bello and Grand Manan met the ship *Alice Ball* from Liverpool (from New Orleans in May) hailing from New Orleans. On throwing a shot ahead of her she hove to and I sent Mr. Platt to examine her papers. He reported that she had no papers and I then directed him to take her to Eastport. The Captain gave up to Mr. Platt a large Confederate flag, under which the ship is said to have left New Orleans." * * *

While Mr. Boutelle was at work with his party in the *Arago* under my instructions for the Survey and sounding of Passamaquoddy bay, the fact of the approach of the several vessels named, became known to the Collector of the Passamaquoddy District, and all the seizures have been made under his advice. The ship *Express* seems to have run the blockade from New Orleans in June last.

At the instance of the Collector, Assistant Boutelle cruised a few days in the vicinity of Grand Manan, and under date of the 5th instant reports:

"I afterwards chased and boarded the ship *Parliament* of Boston, and finding all right, and no other vessel in sight returned to Eastport." "I cannot speak too highly of the support and assistance which I have received from Mr. Platt in all the duties reported."

To meet the emergency pointed out by the Collector, the *Arago* sailed again at noon on the 5th and will continue the look out for vessels belonging to ports in the seceding states of the Union, until she is relieved by vessels appointed to that service.

The action taken in regard to the mutinous crew of the American ship *Gen. Norrell* was at the request of the Captain of that vessel. Mr. Platt with twelve men from the *Arago* boarded the ship and arrested and put in irons ten out of sixteen of the crew. This was done while the *Arago* was under weigh to meet one of the southern vessels.

In order to preserve the efficiency of the *Arago*, after placing officers and men in charge of her prizes, Mr. Boutelle has shipped seven additional men "for one month unless sooner discharged", all of whom have subscribed to the oath of allegiance in the usual form. These were shipped for the special service in which they are now engaged and will be discharged when the *Arago* is relieved by a vessel of the Revenue Marine. I would respectfully request that orders may be given for the Collector to settle the accounts of the men thus employed.

Very respectfully yours,

A. D. BACHE,
Superintendent.

Hon. S. P. CHASE,
Secretary of the Treasury.

COAST SURVEY OFFICE, *December 16, 1861.*

SIR: I have the honor to enclose a copy of a letter from head quarters of the Department of the Missouri, applying for the detail of two plane table assistants to serve on topographical duty, under Col. R. D. Cutts, Aide de Camp of Gen. Halleck, and Assistant in the Coast Survey, to aid in the military surveys in that vicinity. Besides the officers of the Survey who are familiar with the coast and who are either detailed or preparing for detail with the different naval and military expeditions, there are some whose field of work

is not occupied by the United States forces, and who are available for the proposed service in the present exigency. I would therefore respectfully request authority to detail such officers of the Coast Survey as may be disposable, to meet the application enclosed.

Very respectfully Yours

A. D. BACHE,
Superintendent.

Hon. S. P. CHASE,
Secretary of the Treasury.

HEAD QUARTERS ARMY OF THE POTOMAC,
30th September, 1861.

Prof. A. D. BACHE,
U. S. C. S.

SIR: The Major General Commanding directs me to request you to set parties at work to continue and extend the map, drawn under Mr. Whiting's direction, as far as our pickets will advance in the vicinity of Hall's house and Ball's Cross-roads.

The General also desires to be informed of the progress which has been made in the survey and map of the country north of Tennallytown.

I am Sir, Very respectfully, Your obedient servant,

EDW. MCK. HUDSON,
Aid de Camp.

COAST SURVEY OFFICE, *1 October, 1861.*

GENERAL: The communication of the 30th ult. from Aid de Camp E. McK. Hudson, addressed to Prof. Bache, was, in his absence, referred by his secretary to me.

The survey in the vicinity of Hall's house and Ball's Cross-roads will be at once resumed and all the available Coast Survey force be subject to Major Macomb's commands.

Data from the field will be forwarded tomorrow for a report up to date of the progress of the surveys above Tennallytown and on the Virginia side of the river above the chain bridge.

Very respectfully yours,

HENRY L. WHITING,
Assistant, U. S. C. S.

Maj. Gen. G. B. MCCLELLAN,
Commanding Army of the Po.

COAST SURVEY OFFICE, *October 1, 1861.*

DEAR SIR: I write to report the condition of matters here, and to suggest some further order of operation in regard to our army surveys.

Major Macomb has been absent for some days past and I have only seen him this evening after office hours.

Last eve. a note from Gen. McClellan, through one of his Aids, was addressed to you, requesting parties to be set at work to extend the survey on the other side of the river. I enclose the note. Mr. Cooysen referred this to me, and I have acknowledged it and stated that his wishes would at once be complied with. I have also seen Major Macomb concerning the matter. I shall get, tomorrow, data for reporting the progress of the work up to date.

There seems to be a point of etiquette in regard to Major Macomb which I have observed in this case, referring the matter to him and consulting with him, rather than acting independently, as this call from Headquarters might authorize.

My arrangements for field work will be to transfer Mr. Dorr and Rockwell immediately across the river, this Major Macomb agrees in thinking judicious. Mr. Dorr has completed his first sheet up to the Great Falls and closes his work in a very satisfactory manner. He can take up the Virginia side without any detriment to the work on this side. Mr. Rockwell's sheet is not yet com-

pleted, but I think his work had better be suspended and set aside for the present, and the work in Virginia resumed at once; I think it will be best to continue it on the same sheet he was working on between the Chain Bridge and Falls Church.

Mr. West's work, as I understand, does not go much inland, but skirts the river, and extends more generally northward.

I could not make arrangements for taking the field myself until seeing Major Macomb in regard to party appliances. I shall confine my personal operations to the greater demand for results, but just at present I may be fully occupied in arranging for the other parties and giving results of work from the office as far as now done. It needs a watchful eye and some urging to keep the office part of our operations up to the mark; I think it is behindhand some now. In connection with this point, I wish, if you approve it, that you would give me authority to call on the office for *extra service* in case urgent demands are made by Gen. McClellan. I mean only so far as calling on the Drawing Division and Electrotype Division, to take up and put force on work urgently demanded in connection with these surveys here in precedence to the regular Office matters.

From some remarks and conversation with Major Palmer I believe Major Macomb has contemplated engaging and employing outside engineers or surveyors to increase the force of the field parties in extending this survey. Maj. Palmer spoke of Mr. Tekyll and persons like himself. I expressed my doubt of his ability to do the work, or of anyone doing it other than our best topographical contourers of the C. S. I think I can convince Major Macomb of this also if I find he is anxious to increase the force.

In view of this desire on their part, and to meet the demands of the work in time and force, would it not be well to order additional C. S. parties here as soon as possible? I would name as being the most competent, so far as my knowledge of their methods of work goes: Mr. Harrison, Mr. Meehan, Mr. R. M. Bache, Mr. Dennis. In addition to these, Mr. Ferguson and Mr. Adams might also do the work. I understood from Captain Palmer that Major Macomb talked of four or five more parties in addition to what are now at work.

I shall see Major Macomb by appointment tomorrow and will repeat what he concludes in the matter.

In looking into the extent and character of the work we are now doing, and considering its future use and application, I think it is verging on too loose a system of work. Mr. Dorr and Rockwell have both gone over a large area of country and extended their boundaries freely. They have commenced work beyond the limits of Mr. Boschke's District survey and taken it up on sheets without projection or points and depended simply on the chain for accuracy. This was a necessity at the time, and their work has joined remarkably well, but still it cannot be called perfectly reliable work. With a *little* more time and attention to accuracy and a few trigonometrical points to check and control details and lines, this survey would not only be available for present army purposes but would answer all future purposes of acceptable Coast Survey work. I would strongly recommend a triangulation in connection with our P. T. surveys—a few main points well selected and determined, and the minor points to be conspicuous houses, cupolas, spires, trees, &c. This would secure accurate results, enable sheets to be taken up and joined anywhere. It would be unfortunate, if, with all the efforts we have made the work shall prove to have any gross errors of position. Any operator capable of secondary trig. work would be equal to this. Would not Mr. Edwards be available? He knows the country here. I submit this question for your consideration.

Very respectfully yours,

HENRY L. WHITING.

Prof. A. D. BACHE,
Superintendent U. S. Coast Survey, Eastport, Me.

[Copy.]

WASHINGTON, *October 2, 1861.*

SIR: On closing for the present the labors of the Mixed Conference on which I have presided, I cannot but express the high opinion I have been led to entertain of the usefulness and merit of the contributions of the Coast Survey to our knowledge of the Sea Coasts, Sounds and bays of the Atlantic and Gulf

borders of the United States, without which the deliberations of the conference could not have been successfully conducted.

Very truly your friends and Obt. Servts.,

S. F. Du Pont,
Flag Officer, President.
C. H. Davis,
Commander, Secretary.

A. D. Bache, L. L. D.,
Superintendent U. S. Coast Survey.

Coast Survey Office, *October 4, 1861.*

Sir: Having received an appointment as Cadet in the Medical Staff of the Army, I hereby respectfully resign my position as Aid on the Coast Survey; to take effect from this date.

Very respectfully, Your Obe'dt Servt.,

W. H. Gardner.

Prof. A. D. Bache,
Superintendent U. S. Coast Survey.

Washington, D. C., *October 4th, 1861.*

Prof. A. D. Bache.

Dear Sir: Since reporting to you in person I have been at work in the vicinity of the Chain Bridge to which locality I was assigned by Major J. N. Macomb, with instructions to consult the wishes of Brig. Gen. W. F. Smith, Commandg: Div., in the prosecution of my work.

By the latter part of next week I hope to have finished all the Topography within the line of the pickets of the Division.

This morning Gen. Smith tendered to me the position of Actg. Topgl. Engr. of his Division, and advised me in order to obtain the appointment, to apply for a Captaincy in the District Militia, after which he would have me detailed for duty on his Staff in the above capacity.

I explained to him my present position and he thoroughly understands it; as also my desire to consult you in the matter, together with your expressed wish to the same effect.

Upon examination I have found that there are two vacancies of that grade in the 1st Regt. one of which has been tendered to me, with the privilege of leaving at will.

I have no desire to be detached from the Coast Survey without your permission to return at any time.

My object in addressing you on this subject is to ask your approval of the course I would like to pursue, and permission to carry the same into effect.

Very respectfully Your Obdt. Servt.,

Preston C. F. West.

Coast Survey Office, *October 14, 1861.*

Dear Sir: Your very kind letter of the 8th reached me today, and I herewith return you my thanks for the manner in which you acceded to my request.

There is one thing which I forgot to mention in my last letter: General Smith at the time when he offered me the position of Actg. Topgl. Engr. also desired that I would still keep my plane table party at work and gave me permission to turn my results into the Coast Survey Office; so as I will continue the Topog. as usual, I think it unnecessary to send anyone to fill the position I have heretofore held in his Division.

I herewith make application for leave of absence for one year, without pay, wishing it to date from Oct. 10th.

I am happy to hear of your approval of the course I have pursued and hope to give you no cause to regret it.

I remain, Very Respectfully, Your Obdt. Servt.,

Preston C. F. West.

Prof. A. D. Bache,
Superintendent, U. S. Coast Survey.

[Mem. in regard to Coast Survey vessels and Officers for Exped. under Com. DuPont U. S. N. etc., New York, Oct. 14, 1861.]

1. To leave Phelps to continue his work in N. C.
2. To send for Boutelle and officers and men and put aboard *Vixen* forthwith to report at Fort Monroe to Commodore DuPont, or if he has sailed to follow him down the coast.
3. To send a party in sailing vessel *Arago*, to join fleet.
Tanks to be furnished from Navy Yard for *Arago*.
4. Application to be made by Navy Department to Treasury Department, to authorize Superintendent Coast Survey to attach Coast Survey Steamer *Vixen* and Schooner *Arago* to the expedition under Commodore DuPont.
I will write to the Treasury Department in advance to explain exigency.
5. Officers and crew to be paid by Coast Survey. Coal, stores and provisions to be furnished by the Navy Department.

S. F. DuPont.

[From copy.]

Navy Department, *October 16, 1861.*

Sir: I have the honor to request that authority may be given to the Superintendent of the Coast Survey to attach the Steamer *Vixen* and Sch'r *Arago* to the Fleet under the command of Flag Officer S. F. DuPont for the purpose of making hydrographic surveys.

I am respectfully, Y'r Ob't S'v't,

Gideon Welles.

Hon. S. P. Chase,
Secretary of the Treasury.

Boston, Mass., *October 16, 1861.*

Dear Sir: Your letter of October 14th is received.
I wrote two letters to you in New York, but as neither may reach you I write this to request you to lay up your vessel at once at Peekskill turning over to Assistant Blunt if at hand or putting temporarily in charge of a suitable person there. To report to Asst. H. L. Whiting at Washington for topographical duty in connection with C. S. parties attached to Army of Potomac. Mr. Whiting will direct you to report to Lt. Colo. Macomb who is the Topographical Engineer of Gen. McClellan. A thorough co-operation is desired. Details will be communicated by Mr. Whiting in regard to accounts, etc. It is very important that you should report forthwith. Let me know your proceeding by letter addressed here. I can only regret the impossibility of seeing your personally, for which there is no remedy, but will see you on my return to Washington.

Yours respectfully,

———— ————,
Superintendent.

J. Mechan, Esq.,
Sub-Assistant, Coast Survey.

Boston, Mass., *October 17, 1861.*

Sir: I have the honor to enclose to you a copy of a letter addressed to me by the President and Secretary of the Conference on Blockade, acknowledging the usefulness and merit of the contributions of the Coast Survey to the knowledge of the sea coasts, sounds and bays of the Atlantic and Gulf borders of the United States, and expressing the opinion that without this information the deliberations of the Commission could not have successfully conducted.

Very respectfully yours,

A. D. Bache,
Superintendent, U. S. Coast Survey.

Hon. S. P. Chase,
Secretary of the Treasury.

HEADQUARTERS DEPARTMENT OF THE PACIFIC,
SAN FRANCISCO, CALIFORNIA,
October 18, 1861.

SIR: The general commanding the department acknowledges with great pleasure the valuable services rendered by the United States Coast Survey steamer *Active*, under your command in the transportation of troops and supplies from this city to San Pedro, California.

Very respectfully, your obedient servant,

RICH'D C. DRUM,
Asst. Adjutant General.

Commander B. F. SANDS, U. S. Navy,
Commanding U. S. S. C. S. "Active."

BOSTON, MASS., *October 19, 1861.*

SIR: I have the honor to communicate for the information of the Department, the copy of a letter recently received from Lieut. Comg. T. S. Phelps, U. S. N., Comg. Coast Survey Steamer *Corwin* off Hatteras Inlet, and I would respectfully suggest that the same be communicated to the Secretary of the Navy.

Very respectfully, yours,

A. D. BACHE,
Superintendent, U. S. Coast Survey.

Hon. S. P. CHASE,
Secretary of the Treasury.

BOSTON, MASS., *Oct. 21, 1861.*

SIR: Please take charge of the U. S. Coast Survey Steamer *Vixen* and Schooner *Arago* which are attached to the Blockading Squadron on surveying vessels and report to Commodore DuPont, U. S. N., for service.

I enclose a memorandum of the arrangement with the Commodore to which please conform. You are under the instructions of the Superintendent of the Coast Survey in regard to general duty and will report accordingly, and under the official instructions of Commodore DuPont in regard to particular duty. The fullest co-operation with the Commodore is desired and required.

You will obtain at the Coast Survey Office a map showing the work yet to be executed on the Southern Coast by the Coast Survey, and to execute this Commodore DuPont will give you every practicable assistance with the special service in which he is engaged, and to aid in which by surveys is the first object.

My instructions will have supplied details, and the memorandum in regard to stores, compensations and outfits, etc., which I handed to you yesterday will be on file with you and with me as a guide.

I expect you to communicate in the fullest manner to the Commodore so as to make the cooperation of the Coast Survey thorough and complete.

Very respectfully yours,

A. D. BACHE,
Superintendent.

C. O. BOUTELLE, Esq.,
Asst. U. S. C. S.

BOSTON, MASS., *Oct. 21st, 1861.*

SIR: Please proceed immediately to Washington and attend to such business connected with the duties assigned you as should be transacted at the Coast Survey Office, after which you will proceed immediately to Fortress Monroe and report to Capt. DuPont, as required by your special instructions.

You will if necessary state to any officers of the army or navy with whom you are brought in contact that you are traveling on important special service, and require their aid, if needful, in facilitating your movements, showing this letter as your authority.

Yours respectfully,

A. D. BACHE,
Superintendent U. S. Coast Survey.

To C. O. BOUTELLE Esq.,
Assistant U. S. Coast Survey, Commanding U. S. Coast Survey Steamer "Vixen."

GERMANTOWN, PA., *October 23, 1861.*

DEAR SIR: I have completed the soundings on the last of the three sheets furnished me, being that from New Castle to Fort Delaware.

Captain Gibson, in charge of the Fort, thinks that for purposes of defense it would be very desirable to know the formation of the Shoal making two miles below the Peapatch.

The necessary measurements of the wharves (in Philadelphia and Camden) which I had to use as starting points will be made as soon as I am well enough to leave the house.

In running the lines of soundings about the Bulkhead Shoal, it became evident that the usual method of sounding at equal intervals of time would lead to particularly erroneous results. For instance, in running over the flats and shoals there would be but little or no current, and the boat could run the line in a direct course but upon reaching the channel currents it became necessary to steer as high 40° out of the direct course to keep the line. Of course checks may be made by the three point problem, but this is not always available; and, therefore, although I have no means of accurately knowing the angle of change, nor or determining the amount of correction I endeavored to do so mechanically.

It is evident that when the boat running from a given line has to change her course, on account of a change in the current, to keep upon this line, the time intervals must be multiplied by the natural secant of the angle denoting the change.

It would be very easy to have a table constructed to for such a purpose; and also to have marks upon the gunwales to denote every 5° change from the line, the eye of the observer being at the center.

In all our soundings we ran by 30 sec. intervals and the following example, carried further than usually necessary, will illustrate my meaning, by showing the times that should be used for 30 secs. at different angles.

* * * * * * *

Very respectfully yours,

GEO. DAVIDSON, *Assist.*

To Prof. A. D. BACHE,
Superintendent U. S. Coast Survey, Washington, D. C.

PROVIDENCE, *October 23, 1861.*

SIR: I have the honor to inform you, that as authorized in yours of Oct. 17th, the Str. *Vixen* and Schr. *Arago* have been ordered as surveying vessels to the expedition about to leave Old Pt. Comfort.

Very respectfully Yours,

———— ————,
Superintendent.

Hon. S. P. CHASE,
Sec'y of the Treas'y.

[Marked copy.]

FLAG SHIP "WABASH,"
Port Royal Roads, November 5, 1861.

SIR: I have to thank you for your efficient assistance and cooperation in bringing the heavy ships of the Squadron under my command and transports, into Port Royal Roadstead; and I shall take pains to inform the Superintendent of the Coast Survey that your services have met my cordial commendation. I have now to request that you will be pleased to make a hydrographic reconnaissance of the channel between the North Breaker and Fishing Rip, placing such buoys on the latter as will make it safe to pass the South East or North West points of the shoal, or to cross it with the Gun-boats at low water.

I have the honor to be Sir, Your Obedt Serv,

S. F. DUPONT,
Flag Officer Commanding.

CHARLES O. BOUTELLE, Esq.,
Assistant, U. S. Coast Survey.

[Extract from the report of Flag-Officer S. F. DuPont to the Navy Department.]

FLAG SHIP "WABASH," OFF HILTON HEAD,
PORT ROYAL HARBOR, S. C.
November 6, 1861.

* * * The department is aware that all the aids to navigations had been removed, and the bar lies ten miles seaward, with no features on the shore line sufficient to make any bearings reliable. But, by the skill of Commodore Davis, the fleet Captain, and Mr. Boutelle, the able Assistant of the Coast Survey, in charge of the Steamer *Vixen*, the channel was immediately found, sounded out and buoyed. * * * On the evening of Monday Captain Davis and Mr. Boutelle reported water enough for the *Wabash* to venture in. * * *

On the morning of Tuesday the *Wabash* crossed the bar.

S. F. DUPONT,
Flag Officer Commanding
South Atlantic Blockading Squadron.

U. S. STEAMER "VIXEN," PORT ROYAL BAY,
Friday P. M., November 8, 1861.

MY DEAR SIR: We are in possession of this noble harbor and the Flag of the Union again floats over two places in South Carolina. To resume my narrative.

Commodore DuPont intended to resume the attack on Wednesday morning, but a violent gale from the West came up during Tuesday night and continued until afternoon of that day. The *Wabash* with only "auxiliary" steam power would have worked to such disadvantage as to render it almost certain that she would be crippled if not sunk, by the very heavy rifled guns of the enemy's batteries. To hold back, knowing that every hour added to the enemy's strength (for we could see them at work mounting guns) required moral courage of a higher degree than called for in fighting.

Our engine gave out on Wednesday morning, and it was not until near night that we were again in working order. The *R. B. Forbes* came to me to say that the *Augusta* and *Dale* (steam Gunboat and Sloop of War) were outside. I went to the Commodore and reported it, and he expressed so evident a wish to get them in before the attack began, that I determined to bring them in *at night*. The *Augusta* draws thirteen and the *Dale* sixteen feet. We ran down about 8 p. m., and I anchored a boat at the entrance of the channel, with a Fresnel signal lantern in it. Then I went to the two vessels and communicated the Commodore's orders. Both Captains were ready to go in if I would take the responsibility of leading them. The *Augusta* took the *Dale* in tow, and we went in without trouble, having no cast less then nineteen feet; and I had the satisfaction of reporting their arrival to the Flag Officer, at 11½ o'clock p. m. I then ran outside again and anchored at the entrance in readiness to bring in the *Ericsson* and the *Baltic*, drawing twenty and twenty-two feet. The former vessel came off the shoal on Wednesday, after thumping heavily, and losing five horses belonging to the General Staff.

At sunrise we anchored a large spar buoy at the entrance of the South Channel, and I then placed Mr. Platt and Mr. Jones, 1st and 2nd officers of this vessel on board the *Baltic* and the *Ericsson* respectively, and led in myself in this vessel at half flood. We had no cast less than 27 feet, and I can say with certainty that vessels drawing twenty-five feet may come in at all ordinary tides.

The *Wabash* started for the batteries at 8:30 A. M. She was preceded by the *Bienville*, and followed by the *Susquehannah*, *Mohican*, *Seminole*, *Pawnee*, *Pocahontas*, *Curlew*, *Penguin*, *Augusta*, *Seneca*, *Ottawa*, *Umadilla*, *Pembina*, *Isaac Smith*, *Vandalia* (in tow of *Augusta*) and *R. B. Forbes*. The sight was grand, and my only regret was that my special duty here rendered it imperative that I should keep out of the fight. After anchoring the *Baltic* and *Ericsson*, I went on board the *Atlantic* with General Sherman, and witnessed the fight. The fleet sailed around in a circle under slow steam each vessel delivering their fire as their guns were brought to bear. The *Wabash* with her tremendous batteries of eight-inch guns on two decks fairly reeled, as each division fired in succession. Only shells were fired. At the first turn, the fleet came so near that many shells went over into the woods beyond. As they came round the second time, the fleet took a position a little farther out, and the shells went directly in and around the works. Gun after gun ceased firing on shore, until

at last, only one gun replied. As the fleet were about coming round, for the third time, that gun ceased, and their flag came down, but whether hauled down or shot away we could not tell. Soon we saw a barge from the *Wabash* pulling in shore with a flag of truce in her bow, and in a few minutes more, up went the "Stars and Stripes" on the Flagstaff on shore. Such shouts as rent the air from the 13000 troops around us, were never heard before in South Carolina. The whole transport fleet were soon in motion, and with bands playing and soldiers shouting, they went up into the Bay and anchored around the Flagship. I went on board the Flagship in fear and trembling, not knowing how many of my friends might be dead, but to my utter surprise I found that *one man* only was killed and two wounded! The Fort had fired high, aiming especially at the bridge and poop deck, where the Captain and Commodore respectively had their stations. They tried to kill the officers, but thank God, not one was killed in the whole fleet. Only about twelve have been killed, and not many more wounded in the entire fleet. They did not fire shell from the fort on account of their bad fuses. So say their letters. They retreated, or rather *ran away*, leaving swords, clothing, letters, *everything*, behind them. Only four prisoners were taken, who probably remained to *be* taken. The force inside the work numbered 800, with a large number back of it. They were commanded by Brig. Gen. Thos. F. Drayton!!! whose brother, Captain Percival Drayton, U. S. N., fought his ship nobly during the whole fight. So did Captain Stedman of the *Bienville* also from Charleston.

The Commodore sent five vessels over to Bay Point to fight that work, but the enemy had evacuated it in haste, leaving tents, clothing and every other species of personal property, as well as arms and ammunition for our use. We came into possession of two strong forts, abundantly supplied with guns, and a good amount of ammunition and field equipments.

Today I have been with Gen. Sherman all day upon a reconnaissance up Beaufort River and Scull Creek. He does us the honor to say that a large share of the credit of the success here is due to the Coast Survey, and that he means to say so in his report.

Commodore DuPont desires me to present his regards to you, and say that he has not time to write you by this express, but he will do so as soon as the time will allow; to express his eminent appreciation of our services, and thank you for the aid we have rendered. He also desires me to say, that he shall request the Navy Department to thank you. Indeed compliments come in so thick that I shall be likely to grow vainer than ever, if we meet no disaster to upset it all. But truly, the solemn of responsibility which I have felt, weighing upon me, has been too oppressive to joke about; and I devotedly thank God that I have been able so far to perform my allotted share of duty in this great work, as to merit the approbation of the Naval, and Land Chiefs. I know you will feel gratified to hear of it.

Let me here say how much I owe to Mr. Platt for the efficient aid he has rendered me in this whole matter. By his skillful seamanship he saved this vessel from injury in probable loss in the fearful gale of Friday and Saturday last. By his knowledge of Hydrographic work and his constant and unceasing labor since we reached here, he has lightened my labors, and contributed in no small degree to my success.

All the officers of the party also deserve commendation for the manner in which each has contributed in his several sphere to our successful work. I take especial pleasure in mentioning Mr. Willenbucher's labors. He made, on the voyage, three tracings of Hilton Head Island, with the entire topography for each of the channels, and has made a sketch of the fight, which I will send you, when it is completed.

Yours respectfully,

CHAS. O. BOUTELLE,
Asst. U. S. C. S.

Prof. A. D. BACHE,
Supdt. U. S. Coast Survey.

[Extract from report of Brigadier General T. W. Sherman to the War Department.]

HEADQUARTERS EXPEDITION CORPS,
Port Royal, S. C., Nov. 8, 1861.

* * * It is my duty to report the valuable services of Mr. Boutelle, assistant in the Coast Survey, in assisting me with his accurate and extensive knowledge of this country. His services are invaluable to the Army as well as

to the Navy, and I earnestly recommend that important notice be taken of this very able and scientific officer by the War Department.

T. W. SHERMAN,
Brigadier General, Commanding.

U. S. COAST SURVEY STEAMER "CORWIN,"
Hatteras Inlet, Nov. 14, 1861.

DEAR SIR: I have to report that about one o'clock this P. M. during the absence of the Naval Force stationed here, the Rebel Steamer *Curlew*, Capt. T. T. Hunter (or a steamer of the same appearance) stood in round the outer Bulkhead buoy and opened fire on this vessel with a heavy rifled gun, to which we replied with both of our 6 pounders. Our second shot struck within a few yards of her, when she steamed to the Westward about ten minutes and then returned and commenced firing a second time which was warmly responded to on our part, but on three of our shots either passing *into* or *over* her, she started ahead, steaming out of range and up the sound.

The Rebel's shot fell short though their range was good; and the greatest distance reached with our projectiles was about four nautical miles, made with the last shot while the enemy were in full retreat: this desirable result was obtained by raising the forward trucks, giving about 25° elevation.

This apparently was the same steamer that appeared off this place on the 28th ult. then supposed to be the *Winslow*, but now known to have been the *Curlew*.

I am pleased to inform you that this is the second time our guns have driven away an enemy of superior force, who had it in his power to choose his position (which we were unable to do) from a long range to an easy shooting distance: and it is with peculiar pleasure that I inform you of the gallant bearing and enthusiasm of the Officers and crew when ordered to prepare for battle and during the presence of the enemy, who they were conscious, possessed a much superior armament and by his bold approach seemed disposed to close where it would be entirely effective on this vessel and still be beyond the reach of the guns of the Forts.

I am respectfully Your Obedient Servant,

THOS. S. PHELPS,
Lieut. Comg. U. S. N., Assistant Coast Survey.

Prof. A. D. BACHE, LLD.,
Superintendent, U. S. Coast Survey.

PHILADELPHIA, *November 14, 1861.*

SIR: I have the honor to transmit to the Department a copy of a letter from Assistant Charles O. Boutelle, U. S. Coast Survey, detailed to accompany the Military and Naval Expedition under Commodore Du Pont. It shows the useful part taken in piloting the fleet.

Very respectfully yours,

A. D. BACHE,
Superintendent U. S. Coast Survey.

Hon. S. P. CHASE,
Secretary of the Treasury.

COAST SURVEY OFFICE, *November 18, 1861.*

SIR: I would respectfully request that authority may be obtained from the Navy Department, to send three officers of the Coast Survey for whom application has been made by Assistant C. O. Boutelle with the approbation of Commodore DuPont, as passengers in the steamer *Bienville* from New York to Port Royal Sound, with their instruments and baggage, personal and of the Coast Survey.

Very respectfully yours,

A. D. BACHE,
Superintendent.

Hon. S. P. CHASE,
Secretary of the Treasury.

U. S. Coast Survey Office, *November 21, 1861.*

Sir: I have the honor to transmit to the Department a copy of a letter received from Lieut. Comg. T. S. Phelps, U. S. N., Comg. Coast Survey Steamer *Corwin* employed in surveying Hatteras Inlet, giving an account of an attack by the Rebel Steamer *Curlew* and of her repulse.

I would respectfully suggest that a copy of Lieut. Comg. Phelps' letter may be sent to the Honorable Secretary of the Navy to be placed on the files of the Navy Department.

Very respectfully yours,

A. D. Bache.
Superintendent.

Hon. S. P. Chase,
Secretary of the Treasury.

Engineer Department,
Washington, November 21, 1861.

Prof. A. D. Bache,
Superintendent Coast Survey, Washington, D. C.

Sir: Will you be pleased, in view of the present condition of our affairs, and especially regarding the many urgent calls to which the Corps of Engineers is subjected, to allow us to have the use of the services of Mr. Wm. P. Trowbridge, late of the Corps, and now an efficient aid of your own?

It is not designed, of course, to withdraw Mr. Trowbridge from the Coast Survey permanently, but only to ask his assistance for a season; and this is asked, with reliance upon the friendly disposition to which we are already so much indebted.

I have the honor to be, respectfully, Your Obedient Servant,

Jos. G. Totten,
Brig. Gen., U. S. Engineers.

Coast Survey Office,
Washington, November 22, 1861.

Dear Sir: The Engineer Department being greatly in need of officers for service on the defensive works of the country, I have the honor to request a leave of absence from the Coast Survey, without pay, for the purpose of lending my services, during the existing need, to that Department.

I trust I may be able to continue my work on the Gulf Stream Volume, at the same time, in order that it may be published as soon as possible; and when my services shall no longer be required by the Chief Engineer, I hope to have the privilege of returning to the work in which I have become so much interested.

Very Respectfully Your Obdt. Svt.,

W. P. Trowbridge,
Assistant, U. S. Coast Survey.

To Prof. A. D. Bache,
Superintendent, U. S. Coast Survey.

Treasury Department, *November 23, 1861.*

Sir: One of the Revenue Steamers at Baltimore having been ordered to duty at the "Narrows", the Collector of Customs at New York has been instructed on her arrival to turn over to such person as may be designated by you, the Revenue Steamer *Bibb*, with all her furniture, equipments, armament, &c., to be used for the purposes of the Coast Survey.

I am very respectfully,

Geo. Harrington,
Ass't Secretary of the Treasury.

Prof. A. D. Bache,
Superintendent, Coast Survey, Washington, D. C.

Coast Survey Office, *November 25, 1861.*

Sir: The Honorable Secretary of the Treasury having returned the steamer *Bibb* to the service of the Coast Survey, that vessel has been assigned to duty under the charge of Assistant C. O. Boutelle in Port Royal Sound, and at such

other ports as Commodore Du Pont may visit, and at which the services of the party will be required. I would respectfully request that such direction may be given from the Navy Department as may insure the supply of a suitable armament, including small arms for the steamer *Bibb*, so as to admit of her taking her place in the squadron of Commodore Du Pont as soon as practicable.

Very respectfully,

———— ————.
Superintendent.

Hon. GIDEON WELLES,
Secretary of the Navy.

[From copy.]

NAVY DEPARTMENT, *November 25, 1861.*

SIR: I have the honor to acknowledge receipt of your letter of the 22nd instant enclosing a copy of a letter addressed to Prof. Bache, Supdt. Coast Survey, by Lieut. T. S. Phelps, commanding the Coast Survey Steamer *Corwin*, employed in surveying Hatteras Inlet.

The Department compliments Lieut. Phelps and those under his command on their gallant bearing on the occasion of the attack on the *Corwin* by the rebel Steamer *Curlew*, and on their success in repulsing the enemy under disadvantageous circumstances.

I am, respectfully &c.,

GIDEON WELLES.

Hon. S. P. CHASE,
Sec'y of the Treasury.

HEAD-QUARTERS, 3RD BRIGADE E. C.,
HILTON HEAD, S. C., *November 28, 1861.*

MY DEAR PROFESSOR: It had not by any means escaped me that we had a tracing of the topl. survey furnished by you of this island, for we have made constant and important use of it ever since our landing. Indeed the orders given to the various reconnoitering parties sent out, certainly those while I remained in command on shore, were based on the information the map afforded, and tho' such parties were furnished with guides from among the "contrabands" yet the officers were, in most instances supplied with a copy of the map for their guidance and as a check upon the fidelity and competency of the guides.

The survey as I have proved on my personal examination of the various portions of the island, is very correct, leaving us little to do in the way of a topograpl. reconnaissance or survey—all the reconnaissances thus far having been purely military, as was that to Seabrook's on Skull creek.

Mr. Boutelle of the Coast Survey has been exceedingly active and efficient, and has furnished important information to the land portion of the expedition as well as to the naval.

The labors of your branch of the service have been of the highest value during the whole of the military operations on our seaboard frontier since the commencement of our unhappy troubles, furnishing as they have almost all the reliable information to be had in regard to the topography and hydrography of that portion of the country. * * *

Very truly, yours,

H. G. WRIGHT.

Prof. A. D. BACHE,
Superintendent Coast Survey, Washington, D. C.

NAVY DEPARTMENT, *November 29, 1861.*

SIR: As it has become very necessary to repair the *Corwin*, I have to request that you will charter a suitable vessel to take her place for surveying purposes in the North Atlantic Blockading Squadron.

I am respectfully, Y'r Obdt. Svt.,

GIDEON WELLES.

Professor A. D. BACHE,
Superintendent Coast Survey, Washington.

U. S. STEAMER "VIXEN,"
Port Royal Bay, S. C., November 30, 1861.

DEAR SIR: On Sunday last I received from Commodore Du Pont orders to accompany and pilot an expedition to St. Helena Sound, and the rivers opening into it.

The expedition consisted of the *Pawnee*, Capt. Drayton, the *Pembina*, Capt. Bankhead, and the *Umadilla*, Capt. Collins, the whole under the command of Capt. Drayton of the *Pawnee*. Greatest draught of water was that of the *Pawnee*—10.5 feet.

We left at 3 A. M. on Monday morning, and were clear of Port Royal Bar before day-light. Before leaving I had drawn upon the C. S. chart of St. Helena Sound, the sailing lines which I intended to follow, and sailing directions for entering. We came up with St. Helena Bar about nine A. M., the tide having been running flood about one hour. As the bearings for entering came on, I dropped a barrel buoy over the stern of the *Vixen*, and steamed in on the first course at full speed, the *Pawnee* and Gunboats following in line. At each successive angle as indicated by the bearings, I dropped a buoy without slacking our speed, finding everywhere the water indicated upon our chart, and having no cast less than 17 feet.

On arriving inside the Sound, at the point where the sailing lines to Otter Island Anchorage and to Coosaw River diverge (see chart) I dropped a buoy and stopped to allow the armed vessels to go on and attack the work on Otter Island, which we could see, and which had been reported as occupied by the enemy. But it turned out to be deserted and the magazine blown up. I enclose a plan or perspective view of the Fort, made by Mr. Willenbucher under my direction.

In the afternoon I went on board the *Pawnee*, by request of Captain Drayton, and took her up St. Helena Sound and Coosaw River, as far as Coosaw Island, close to this place at Sam's Pt., Lady Island, near my station "Lady," another work had been erected for the protection of the inland passage between Charleston and Savannah, via Beaufort. This was also deserted. It mounted four guns, one of which had been burst, and two were spiked. They were old English guns, having the "broad arrow" and "G. R." upon them. The fort was built by J. W. Gregorie, formerly of the Coast Survey. He also planned the larger work at "Bay Point" called "Fort Beauregard." Here, as everywhere else, the negroes only were in possession.

On Tuesday morning Capt. Drayton took on board entrenching tools and other property left in the work. I went through Parrott Creek to Mr. Coffin's plantation on St. Helena, and took on board Major Morrison 79th Highlanders, and Lieut. O'Roorke, U. S. Engineers, sent by Gen. Sherman to inspect the condition of Otter Island and Hunting Island. I took them to Otter Island where the *Pawnee* and the Gun Boats arrived about noon.

The afternoon was spent at Otter Island, which is the key to the possession of St. Helena Sound and controls the inland connection with Charleston as completely as the closing of Scull Creek shuts off that with Savannah.

On Wednesday morning at daylight, Capt. Drayton and the military officers came on board the *Vixen*, and we went up the Ashepoo as far as Mrs. March's plantation on Hutchinson Island. About three miles up the River we came to another abandoned "Fort" on Fenwicks Island, upon J. W. Seabrook's plantation, just below Major Murray's place. It mounted four guns, of which one had been thrown into the river, two burst, and one left on the ground. Here the magazine was left intact, having nothing in it but a few empty shells. I enclose drawings of each work made by Mr. Willenbucher.

The Gun Boats *Pembina* and *Umadilla* accompanied us up the Ashepoo as far as the mouth of Mosquito Creek at Bennitt's Point, where they anchored while we went on to Mrs. March's. We found all the negroes on this place, but no white people. The negroes were overjoyed to see us and shouts of "How dy'e Massa" etc. etc. greeted us from all directions. I found my primary tripod and scaffold here undisturbed. That at Port Royal was cut down on the day of the fight. The house and property here seemed in good order, and there were no signs of negro pillage. While we were at this place, two other places on Bear Island between Ashepoo and South Edisto rivers, were set on fire by their owners, or negroes acting for them, to prevent their falling into our hands.

Returning to Otter Island I went again on board the *Pawnee*, and took her to "Hunting Island" following the black dotted line shown upon the chart. It was near high water and there was no difficulty in crossing from the Sound to Morgan River, in nine feet at low water. But the great length of the *Pawnee*

rendered it difficult for me to make the short turns required in going through the "Slue channel" from Morgan to Harbor rivers. But we got through safely and anchored opposite Hunting Island Point.

Going on shore here I found my primary tripod and scaffold undisturbed, but the Light Tower was a heap of ruins. It had been *blown up* since our occupation of Port Royal. It was standing as we passed down the coast on our way to Port Royal. This piece of Vandalism has been committed from sheer *spite*, apparently. The lighting apparatus, or part of it has been found by the 79th Highlanders, and is in possession of the Commodore. The old St. Helena Light Boat is said to be sunk in the "Brickyard Creek" above Beaufort. The "Martin's Industry" Light Boat was burnt on Beaufort River, on the evening of the fight here. The wreck of her hull now lies there. Such desperate acts are evidence that the rebels consider *their* occupation of the coast as ended for the present.

The Beacon Light at St. Helena had been removed by the rebels. The frame on which it stood has been undermined by the encroachments of the sea, and now leans forward some four feet. If this Light-house is ever reconstructed, it will be safest to place the main light upon "Harbor Island" where it will be safe from abrasion by the sea, and a long range will be afforded for beacons.

The keeper's dwelling is in good order, but most of the furniture has been destroyed or badly injured. This building was only completed last year.

On Thursday morning we returned to Port Royal, coming out of St. Helena by the sailing lines shown upon the chart, and carrying out the water indicated. I did not attempt to follow the line of best water near the end of the bar, but continued the course of S. by E. ¾ E. which gave 14 feet water, and shortened our distance some two miles.

No battery or Rebel flag could be discovered at Bay Point, South Edisto and indeed we have not seen a rebel flag since the fight at Port Royal.

Similar sketches to those enclosed have been made for the Flag Officer, who will send them to the Navy Dept.

A rebel steamer—the *Gen. Clinch*—was in South Edisto River when we entered St. Helena Sound. She was not seen after Monday.

I understand Commodore Du Pont that Capt. Drayton's report acknowledges our services in a very complimentary manner.

Yours respectfully,

CHAS. O. BOUTELLE,
Assistant Coast Survey.

Prof. A. D. BACHE,
Superintendent U. S. Coast Survey.

PORT ROYAL BAY, S. C.,
U. S. Steamer "Vixen," November 30, 1861.

DEAR SIR: The accompanying drawings should have gone by last steamer. I think they will interest you.

The sketch of the action is not what could be wished. We were some three miles (nearly) from it and the projection is out. Still, the elliptical form of the fleet is shown. No vessels appear ahead of the Flag-ship because they were inshore of her as seen from the transport fleet. The point of view is from near the S. E. end of "Fishing Rip" where the transport fleet was anchored.

Plans and views of the forts around St. Helena will go by next mail. So will a plan and view of Bay Point (Fort Beauregard).

Yours respectfully,

CHAS. O. BOUTELLE.

Prof. A. D. BACHE,
Superintendent U. S. Coast Survey.

COAST SURVEY OFFICE, *December 3, 1861.*

DEAR GENERAL: I have the honor to send to you as requested in your letter of the 30th Nov., a set of charts of the Coast Survey from St. Augustine to Va.

If the Eastern Shore is safe for our parties I should be glad to complete the topography there. As this would be useful in your military operations you may be disposed to give me the same facilities as are afforded by the Army authorities here, namely, details of men and transportation, the officers and instruments

&c. being furnished by the Coast Survey. The results being communicated to you from time to time as obtained.

Very respectfully yours,

A. D. BACHE, *Sup'd't.*

Maj. Gen. J. A. DIX, *U. S. A.*

NAVY DEPARTMENT, *December 7, 1861.*

SIR: I have the honor to acknowledge the receipt of a drawing representing correctly the topography of Port Royal, on which is indicated the order of battle and plan of attack on the 7th of November. Please accept my acknowledgement for the favor.

I am very respectfully, Your Obdt. Svt.,

GIDEON WELLES.

Prof. A. D. BACHE,
Supt. Coast Survey.

U. S. SCHOONER "CASWELL,"
Port Royal, S. C., December 7, 1861.

DEAR SIR: I have to report my arrival here via steamer *Bienville*, on the 28th November, and the arrival of the *Caswell* on the 5th December, with four men for two Topographical Parties.

Very respectfully, Your Ob't Se't.,

WM. H. DENNIS,
Sub-Assistant, U. S. C. S.

Prof. A. D. BACHE,
Superintendent U. S. Coast Survey, Washington, D. C.

COAST SURVEY OFFICE, *December 10, 1861.*

SIR: I have the honor to transmit to the Department an extract of a letter from Brig. Gen. H. G. Wright, of the Port Royal expedition, acknowledging the services of the Coast Survey maps, and officers in complimentary terms.

Very respectfully Yours

A. D. BACHE, *Superintendent.*

Hon. S. P. CHASE,
Secretary of the Treasury.

[Copy.]

ST. LOUIS, *December 10, 1861.*

Prof. A. D. BACHE,
Superintendent U. S. Coast Survey, Washington, D. C.

MY DEAR SIR: You are aware that during the past summer, it was deemed advisable by Gen. Fremont to erect a number of field works for the defense of this city. The Rebels threatened then—threaten now, but whatever may have been the condition of affairs in the first instance, there is as little danger now to St. Louis as to Washington, from rebel attack. Nevertheless, it is but proper that a thorough survey, either for military or civil purposes, should be made of the vicinity of St. Louis, as well as to exhibit past operations as to provide for any future contingency, and if this survey can be made but with very little additional expense to the Government, as is the case at present in Fairfax county, Virginia, General Halleck is desirous of having it executed.

Will you, therefore, please detail one or two Coast Survey Plane Table parties to operate during the winter in this Department under my direction.

The climate of St. Louis is softer, and during the winter will allow of field operations being carried on with more certainty and with less exposure, than in the vicinity of Washington.

If this arrangement can be made, please telegraph me to that effect, and hasten the departure of the parties—one or two, as you can spare—with due regard to other sections.

The arrangements in regard to expenses will be the same as allowed by Maj. Gen. McClellan on the Potomac; that is, the pay, traveling expenses, instru-

ments, &c. will be drawn, as usual, from Coast Survey appropriations; and the labor, field transportation and office room from the Army.

I am, very truly and respectfully yours,

RICHD. D. CUTTS,
Col. & A. D. C.

HEADQUARTERS CHEAT MOUNTAIN DIVISION,
Philippi, December 13, 1861.

SIR: During the campaign of 1861 in western Virginia it was determined to construct defensive works on the summit of Cheat Mountain. The superintendence of these works was assigned to Lieutenant Colonel Samuel A. Gilbert,[1] 24th Ohio (now colonel 44 Ohio) under whose direction the works originally laid out, as well as others devised by himself and Colonel Ammen, were constructed. In the execution of this duty Colonel Gilbert exhibited superior skill and untiring industry and I cheerfully bear testimony to his valuable services as engineer.

Very respectfully your obedient servant,

J. J. REYNOLDS,
Brigadier General Commanding Division.

A. D. BACHE,
Superintendent U. S. Coast Survey.

COAST SURVEY OFFICE, *December 14, 1861.*

DEAR SIR: Yours of this date has been received.

Leave of absence is hereby granted to you from this date, until the close of the present war, without pay.

Yours respectfully,

———— ————,
Superintendent.

F. R. HASSLER, Esq.

HEAD QRS. EX. CORPS,
Port Royal, S. C., December 14, 1861.

Professor BACHE,
Superintendent Coast Survey, Washington, D. C.

DEAR SIR: Can you furnish me with the topography of the country around Savannah, particularly about Montgomery and Vernon River? Topographical information of that part of the country would be of infinite importance to us at this time.

We are very much indebted to you for the very accurate and elaborate sketches of the different parts of the coast from Geliston to Tybee. They have been of invaluable service to us. I speak of the Topographical drawings as well as the Maps of the Coast Survey.

Very respectfully, Your obt. Svt.,

T. W. SHERMAN,
Brig. Gen. Commanding.

TREASURY DEPARTMENT, *December 16, 1861.*

SIR: Agreeable to the request contained in your letter of this date, you are hereby authorized to detail such officers of the Coast Survey, as may be disposable, to serve on topographical duty under Col. R. D. Cutts, Aid de Camp of General Halleck, to aid in the military surveys in the Department of the Missouri.

I am very respectfully,

S. P. CHASE,
Secretary of the Treasury.

A. D. BACHE Esq.,
Superintendent of Coast Survey, Washington, D. C.

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[1] Formerly assistant, U. S. Coast Survey.

COAST SURVEY OFFICE, *December 19, 1861.*

DEAR SIR: Yours of December 7th has been received.

Mr. Boutelle will make all arrangements needed for parties.

It is intended to work with details of soldiers as here and on Eastern Shore of Va. etc.

Yours respectfully,

A. D. BACHE,
Superintendent.

WM. H. DENNIS Esq.,
Sub-Assistant U. S. Coast Survey.

HEADQUARTERS, DEPARTMENT OF THE MISSOURI,
St. Louis, December 21, 1861.

Prof. A. D. BACHE,
Supt. U. S. Coast Survey.

MY DEAR SIR: I received yesterday a copy of your instructions to O. Henricks Esq. to report to me at this place, to perform Plane-Table duty around St. Louis and in this Department. I expect to see him here early next week.

I hope that Mr. Mechan will also soon be en route, as, knowing little of Mr. Henricks, my reliance will be principally placed on the former.

Very respectfully and truly Yours,

RICHARD D. CUTTS.

[From copy.]

COAST SURVEY OFFICE, *December 21, 1861.*

DEAR SIR: To meet the call made in your letter of the 14th which was received this morning, I send you by the mail of today a copy of the preliminary chart of the Coast of Georgia which has been recently prepared at the Office and lithographed to meet the emergency for information in regard to that part of the coast for general purposes. On this has been traced for your use such information as can be gathered from the State Map of Georgia issued in 1859 under the auspices of the Surveyor General of that State to show the interior connection between Savannah and Ossabaw Sound.

I send also the engraved chart of Ossabaw Sound in its unfinished state. The topography of the upper part of the sound is engraved as far as the field work has been carried, which is a little below the limit to which the soundings have been carried. The position of Montgomery which is added with the pen has been taken from the hydrographic sheet and may be relied on for practical purposes.

A proof of the Chart of Savannah River is also enclosed with the two charts before mentioned. These I trust may be of use, giving as they do, precise information in regard to the approaches from the coast.

Yours respectfully,

A. D. BACHE,
Superintendent.

Brig. Gen. T. W. SHERMAN, U. S. Army,
Port Royal, S. C.

WASHINGTON, *D. C., December 30, 1861.*

Prof. A. D. BACHE.

DEAR SIR: I wish to obtain the services of an Assistant of the C. Survey on the service with reference to which General Foster conversed with you. If you can detail one, please do so, and oblige,

Yours very truly,

A. E. BURNSIDE.

COAST SURVEY OFFICE, *January 8, 1862.*

DEAR SIR: The House today in Committee of the Whole voted out the item for expenses of Treasury notes, and after passing those for the Coast Survey determined to suspend them during the war. I suppose that in proportion to

the amount of suspension they could hardly have granted a more decided boon to secession, and therefore I can hardly think the House will confirm these decisions.

The services of the Coast Survey in furnishing the pabulum of expeditions, blockades, etc., ought to be known. Our officers do the piloting and their skill is acknowledged by the highest Naval authorities. They are with their vessels attached, under your authority, to the expeditions.

The Topographical maps which they have made and are making as attached to the different Army Corps are highly important. We have three topographical parties near Washington, two in Accomac with General Lockwood, two parties with General Burnside, one (Hydrographic) with Commodore Goldsborough, five parties with four vessels with Commodore DuPont on the Coast of South Carolina and Georgia, one with Captain Farragut, two with General Halleck.

Your recommendation of the reduced appropriation for the work ought to have carried us safely through, and I hope yet may do so.

If it is not asking too much, would you be so good as to see Members of the House, to represent our services and the injury to the cause of the war which suspending the appropriation must carry with it.

If there was no Coast Survey, now would be the time to organize one for immediate service.

Very respectfully Yours,

A. D. BACHE,
Superintendent.

Hon. S. P. CHASE,
Secretary of the Treasury.

FLAG-SHIP "WABASH,"
Port Royal Harbor, S. C., January 9, 1862.

SIR: It has occurred to me that we should have a better understanding as to your operations with the Coast Survey force, and I desire to make the following suggestions:

I am expecting the light-ship here in a few days, and I will be obliged to you if you will drop a buoy to-day on the place she is to occupy.

When I requested you to survey Skull creek and Broad river it was my expectation that the results of a rapid reconnaisance, showing the direction of the principal channel and the depths of mean low water, could be furnished in a few days, the completion of the work being left to a more leisurely time. I find, however, I can depend upon the skill of pilots and masters for the safe navigation of these passages; and I therefore will ask you to turn your personal attention to the placing of the buoys in the harbors and in the possession of the naval forces under my command, and to take them up in the following order: Tybee Entrance, St. Helena Sound, Wassaw Sound, South Edisto, Ossabaw Sound, North Edisto.

Of these harbors the first four are, like Port Royal, permanently occupied. Vessels are passing in and out of their channels at all times; and if the latter are buoyed in such a manner that, with simple directions, they can be traversed by a stranger in security, much labor and delay will be saved.

No one knows how to do this better than yourself, and I rely upon your judgment and zeal.

Please deliver to this ship the barge taken in North Edisto.

I am, respectfully, your obedient servant,

S. F. DUPONT.
Flag-Officer, Commanding South Atlantic Blockading Squadron.

C. O. BOUTELLE, Esq.,
Assistant Coast Survey, Port Royal Harbor.

COAST SURVEY OFFICE, *February 22, 1862.*

SIR: I have the honor to report that in compliance with the request of the Hon. Secretary of the Navy, and of your direction, a Coast Survey party has been detailed to report to Commodore Farragut, U. S. N., and placed on board the steamer *Uncas*, kindly loaned by the Navy Department. The vessel will leave New York, touching at Port Royal and Key West, early next week.

Assistant F. H. Gerdes of the Coast Survey has been engaged for some years on the Gulf Coast in charge of the party, having Sub-Assistant Oltmanns and

Assistant Joseph Harris of the Boundary Commission, and T. C. Bowie, Aid in the Coast Survey with him.

We are indebted to the courtesy of Archibald Campbell, Esq., Commissioner N. W. Boundary, and of the State Department for the services of Mr. Harris, formerly a Sub-Assistant in the Coast Survey, and now a volunteer in this service.

The other officers have served in different parts of the Gulf Coast.

I had already by request of Commodore Farragut placed Richard E. Halter, Sub-Assistant in the Coast Survey, who served on the coast of Louisiana—at his disposal on board of the *Hartford*.

I would respectfully request that a copy of this letter be communicated to the Navy Department.

Very respectfully, yours,

A. D. BACHE,
Superintendent.

Hon. S. P. CHASE,
Secretary of the Treasury.

FLAG-SHIP "PAWNEE,"
Fernandina Harbor, March 7, 1862.

SIR: On the receipt of this order you will immediately proceed with the *Bibb* to this place, with a proper supply of buoys, to mark out the channels to Fernandina and to Brunswick.

The utmost despatch is necessary, as I consider this bar a very dangerous one. In my absence you will please report to Commander Drayton.

The buoys taken up here are in good preservation, but without moorings. I think, however, that car wheels, many of which can be had here, will answer the purpose. I see no chains.

Respectfully, your obedient servant,

S. F. DUPONT,
Flag-Officer, Commanding South Atlantic Blockading Squadron.

C. O. BOUTELLE, Esq.,
Assistant Coast Survey, Surveying Steamer Bibb.

TRANSPORT STEAMER "MISSISSIPPI,"
Hilton Head Island, S. C., March 10, 1862.

SIR: I cannot allow myself to leave this port without tendering to you my cordial thanks for the great assistance which you have rendered to the service, and to myself, during the past week, in making this vessel fit to pursue her voyage to Ship island in safety.

With the injury which this vessel has received it would have been probably impossible to have gone forward in her; and it would have been equally impossible at this place, within a reasonable time, to have repaired that injury without the constant and cheerfully tendered services of yourself, and the ingenious skill and unremitting labor of your officers, Chief Engineer Charles French and Executive Officer Robert Platt.

To you, therefore, and to these officers, I owe it that I may now hope to reach my command in the gulf in season for active operations in that quarter.

I shall take pleasure in causing a proper representation to be made to the government of your usefulness in this regard.

For the many courtesies experienced by myself at your hands, believe me, sir, your grateful friend and obedient servant,

BENJ. F. BUTLER,
Major General Commanding.

CHAS. O. BOUTELLE, Esq.,
Ass't U. S. Coast Survey, Com'dg U. S. Steamer "Bibb."

COAST SURVEY OFFICE, *March 20, 1862.*

SIR: I have the honor to transmit for your information, the enclosed copy of a letter addressed by Major General Butler to Assistant Boutelle of the Coast Survey by whose exertions and by the labors of the Engineer and executive officers of the Survey's steamer *Bibb*, the Transport *Mississippi* was fitted for sea after being seriously damaged by striking on the Frying Pan Shoals.

Participating in the satisfaction which it must give you to know that the Commanding General of a Department and fifteen hundred of his troops have thus avoided much delay in reaching the scene of operations, I remain,

Very respectfully, yours,

A. D. BACHE,
Supdt. U. S. Coast Survey.

Hon. S. P. CHASE,
Secretary of the Treasury.

HARRIET LANE,
FORTS JACKSON AND ST. PHILIP,
April 29, 1862.

DEAR SIR: Amid the exciting scenes here, and the many duties that are imposed on me, I must steal a few moments to tell you something of the share the Coast Survey has had in our doings, and to thank you for the valuable assistance rendered me by the party you sent out here. * * * The results of our mortar practice here have exceeded anything I ever dreamed of; and for my success I am mainly indebted to the accuracy of positions marked down, under Mr. Gerdes's direction, by Mr. Harris and Mr. Oltmanns. They made a minute and complete survey from the "jump" to the forts, most of the time exposed to fire from shot and shell, and from sharpshooters from the bushes. * * * The position that every vessel was to occupy was marked by a white flag, and we knew to a yard the exact distance of the hole in the mortar from the forts, and you will hear in the end how straight the shells went to their mark. Mr. Oltmanns and Mr. Harris remained constantly on board to put the vessels in position again when they had to haul off for repairs, or on account of the severity of the enemy's fire. * * * I cannot speak too highly of these gentlemen. I assure you that I shall never undertake a bombardment unless I have them at my side. Mr. Gerdes has been indefatigable in superintending the work, laboring late at night in making charts and providing the officers in command of ships with them, marking the positions of obstructions in the channel, and making all familiar with the main way. No accident happened to any ship going through, notwithstanding the gentlemen in the forts thought the obstructions impassable. * * * You must excuse my hurried letter, but I could not omit writing to you to thank your good fellows for what they have done for me, and to thank you for sending them.

* * * * * * *

Yours, very truly,

DAVID D. PORTER.

Prof. A. D. BACHE,
Superintendent U. S. Coast Survey.

FLAG-SHIP "WABASH,"
Port Royal Harbor, S. C., May 9, 1862,

SIR: I am informed by the blockading officers off Charleston that one or two buoys placed on the Rattlesnake shoal would assist them materially in covering that port.

I have therefore to request that you will proceed with the United States steamer *Bibb*, under your command, off the bar of Charleston, and, after communicating with the senior officer, Commander Parrott, proceed to plant, in accordance with his wishes and your intelligent judgment, such buoys as may be needed.

Respectfully, your obedient servant,

S. F. DUPONT,
Flag-Officer, Commanding South Atlantic Blockading Squadron.

C. O. BOUTELLE, Esq., *Ass't U. S. Coast Survey,*
Commanding U. S. Steamer "Bibb," Port Royal.

U. S. STEAMER "HARRIET LANE,"
Ship Island, May 16, 1862,

SIR: I forward to you by the *Baltic* a plan of Fort Jackson, (or the remains of it,) faithfully drawn, under the direction of Mr. Gerdes, by Messrs. Harris and Oltmanns, Assistants of the Coast Survey. It is a striking specimen of the

effects of mortar practice, showing what can be done when distances are accurately determined, as they were in this case, by the gentlemen belonging to the Coast Survey. If you can afford the expense it would be worth while to have the plan lithographed and kept as part of the history of this hideous war.

I regret to say that Mr. Oltmanns, of the *Sachem*, has been severely wounded in the left breast by a rebel rifle ball. I sent the *Sachem*, in company with three of the mortar steamers, to show them the way up Pearl river, in hopes of finding some of the enemy's gunboats, which have mysteriously disappeared, (now most likely burnt,) and while trying alone to push up the river the *Sachem* was attacked by a body of riflemen. Mr. Oltmanns fell while directing the movements of the vessel. The battery of the *Sachem* was soon brought to bear and the rebels driven away, one of them being shot dead on the branch of a tree. Everything has been done to make Mr. Oltmanns comfortable. I intend to send him to the hospital at Southwest Pass, where he can be properly attended to. I regret his loss very much, as he has made himself very prominent throughout the operations here, in performing the various duties he was called upon to do, as indeed all the members of the Coast Survey party have. I have not spared the *Sachem*, but have treated her like the rest of the vessels, putting her under fire when it was necessary.

On the 8th of this month, off Mobile entrance, the steamer *Clifton* went ashore on S. E. shoal, under the guns of Fort Morgan, and neither of the larger steamers could get near enough to help her without danger of grounding. I ordered the *Sachem* to go in and help her by carrying out anchors and lines, and though the shot from the fort were flying over and around the *Clifton* they went at it cheerfully and intelligently. The *Clifton* got off just as they got their lines ready and anchors down to heave her off, but Lieut. Com'g Baldwin felt as much indebted to the party on the *Sachem* as if they had been the means of relieving him from his perilous position.

I look upon the *Sachem* in the same light as I would upon a topographical party in the army, and if I lose her in such employment she will have well paid for herself.

Mr. Gerdes will be employed, for the present, in looking up the numerous buoys which these people have stowed away or wantonly destroyed, as they have nearly everything else. When found he will put them all down in their proper places. * * *

Very respectfully, your obedient servant,

DAVID D. PORTER,
Commanding Flotilla.

A. D. BACHE, LL. D.
Superintendent Coast Survey.

U. S. SURVEYING "SACHEM,"
Off Ship Island, May 16, 1862.

DEAR SIR: Having received your verbal instructions to accompany the gunboats of your flotilla to Lake Pontchartrain and Pearl river, I got under way on the 13th instant, at 5 o'clock a. m., and was followed by the *Westfield*, Captain Renshaw; *Clifton*, Captain Baldwin; and *Jackson*, Captain Woodworth. I led them south of Cat island to St. Joseph's light-house, they following close in my wake. We carried, for the least, nine feet, and no stoppages occurred. Near Grande island, your senior officer, Captain Renshaw, requested me to overhaul a vessel to the southward, as I drew the least water. Returning I led the course again, and went through the Rigolets, and over the middle ground, with eight feet, and thence directly to Mandeville and the mouth of the Chefuncta river, on which Madison is situated. I brought two more schooners to, and overhauled another, but all had passes from General Butler. We anchored here in company with the *New London*, and I believe also the *Calhoun*. The former intending to go next day into the river and visit Madison, Captain Renshaw concluded to return to Pearl river, and search in Pearlington and Gainesville for vessels, and I took the lead again. On the *middle ground*, near Point aux Herbes, the *Jackson* ran aground, but the other vessels got over without touching. The senior officer requested me to relieve her if possible, the *Sachem* not drawing over six and a half feet, but it was found impossible. An arrangement was made with the steamer *Whiteman* to come alongside next day, lighten the *Jackson*, and tow her off. I anchored near the light-house of the Rigolets,

close to the *Westfield*, having previously run ten miles further to the eastward and back to communicate with Captain Baldwin, and to bring him Captain Renshaw's directions.

On the 15th instant we started early, and I took the lead into Pearl river. We passed Pearlington, and went up some thirteen miles, where, the river becoming so narrow that the *Westfield* and *Clifton* could not make the abrupt turns, both of those vessels came to. Their captains came on board the *Sachem*, and we went further up. About three miles from Gainesville we were fired upon with musketry, several balls striking the vessel, and one severely wounding my executive officer and assistant, Mr. Oltmanns, of the Coast Survey. The bullet hit him in the left breast, just over the lungs. He was carried down at once, and placed in the cabin, where he was as well attended to as circumstances would permit. We returned the fire, discharging perhaps some fifty or sixty musket shots, and finally grape and canister from the 32-pounder, which scattered the enemy. The difficulty consisted in getting the *Sachem* turned, as the river had hardly the width of her length.

The first cutter of the *Sachem* was lost, and Captain Baldwin lost his gig, both being crushed between the woods and the propeller in turning, and my launch was filled, and nearly lost too. The *Sachem* also lost her flag-staff, but the stars and stripes were hoisted directly on the main gaff. She now carries the marks of ten or twelve rifle or musket balls. The quartermaster at the wheel narrowly escaped, a bullet having passed through his clothes, and several other persons on board had very narrow escapes from injury. When we returned to the *Clifton* and *Westfield*, Mr. Oltmanns was transferred to the former vessel, and everything that the great kindness of Captain Baldwin could suggest was done for him. The doctor probed his wound, but did not find the ball. At seven o'clock we anchored near Grassy island, in Lake Borgne.

We are deeply indebted to Captains Renshaw and Baldwin, both of whom ably directed affairs during the attack. The loss of Mr. Oltmanns from the party is very great, as he had learned to manage the *Sachem* for any service. Even if he recovers, he will be unfit for duty this season, and will have to take the first opportunity to return north. Late at night I visited the *Clifton*, and was told by the doctor that the wound was very severe; but that Mr. Oltmanns, with care, might recover.

This morning, the 16th May, we got under way, and stood for Cat and Ship islands. Mr. Harris takes the post of executive officer on the *Sachem*.

Very respectfully,

F. H. GERDES,
Assistant U. S. Coast Survey.

Capt. D. D. PORTER, U. S. N.,
Commanding U. S. Mortar Flotilla.

COAST SURVEY OFFICE, *May 17, 1862.*

SIR: I have the honor to transmit for the archives of the Department a copy of the journal of Assistant F. H. Gerdes, U. S. Coast Survey, showing the services rendered to the fleet under command of Flag Captain Farragut, U. S. N., mortar flotilla under command of Capt. D. D. Porter.

Also a copy of the same journal for transmission to the Navy Department.

Very respectfully, yours,

A. D. BACHE,
Supdt. U. S. Coast Survey.

Hon. S. P. CHASE,
Secretary of the Treasury.

[Report of Assistant Henry Mitchell on hydrographic Surveys at Oregon Inlet and in Neuse River, Military Department of North Carolina.]

BOSTON, MASS., *June 9, 1862.*

DEAR SIR: The instructions which I received from you on the 25th of March last directed me to report to Commodore L. M. Goldsborough, U. S. N., and Major General A. E. Burnside, U. S. A., for the execution of certain hydrographic surveys in the military department of North Carolina. * * *

We furnished, for the use of the military department, sketches showing the positions of our buoys and the soundings we had made.

Major General Burnside has done me the honor to make me the bearer of a letter to yourself commending our services.

Very respectfully, yours,

HENRY MITCHELL,
Assistant, U. S. Coast Survey.

Prof. A. D. BACHE, L. L. D.,
Supt., U. S. Coast Survey.

UNITED STATES STEAMER "PAWNEE,"
Stono River, June 14, 1862.

DEAR SIR: The charts of this river, kindly sent me from your office some little time since, have afforded so much valuable information, which could be obtained nowhere else, and without which I scarcely see how either I or the commanders of the other vessels composing the squadron in these waters could have got on in their very intricate navigation, that I cannot but express the obligation I feel under, not only on this, but other occasions, for the great assistance the Coast Survey charts have been to me in properly understanding the complicated inland navigation of Carolina and Georgia. And I will also beg leave, at the same time, to call attention to the very valuable services of the same nature, rendered to vessels which I have had on detached service, by Captain C. O. Boutelle, of the *Vixen* and *Bibb*, during the last eight months. Without him I do not see how we could have got into St. Helena Sound, or North or South Edisto, to say nothing of Stono.

Very truly, your obedient servant,

P. DRAYTON,
Commander, Senior Officer at Stono.

Professor A. D. BACHE,
Superintendent Coast Survey, Washington.

FLAG-SHIP "WABASH,"
Port Royal Harbor, S. C., June 30, 1862.

SIR: You will proceed with the U. S. steamer *Bibb*, under your command, to Hampton Roads, stopping on your way at North Edisto, Stono, and Charleston, communicating with the commanding officers at those places, and delivering all mails and stores put under your charge.

It will give me pleasure, in transmitting your various reports to the Secretary of the Navy, to call attention to the valuable services of the vessels of the Coast Survey since they have been attached to this squadron, and particularly to the zeal and earnestness which you have always exhibited, not only in the execution of the duties pertaining to the Coast Survey, but in aiding important war operations on this coast by assisting with your local knowledge the gunboats in crossing the various bars and entering the difficult inlets, regardless whether they were brought under fire or not.

You will please convey to all associated with you my appreciation and commendation of their services, and which I purpose to bring to the notice of the Superintendent of the Coast Survey.

The buoy vessel, *S. C. Steele*, will be left in charge, for the present, of Commander Drayton, the senior officer in Stono, until I can give further directions.

Respectfully, your obedient servant,

S. F. DUPONT,
Flag-Officer, Comd'g South Atlantic Blockading Squadron.

C. O. BOUTELLE, Esq.,
Assistant Coast Survey, U. S. S. "Bibb," Port Royal.

U. S. STEAMER "CORWIN,"
Potomac River, Sept. 5, 1862.

DEAR SIR: I have to report to you, for the information of the Navy Department, that Arnold Harris, the late commander of the Gunboat *Island Belle* (and who was recently endeavoring to obtain the command of the *Teazer*)

crossed over to Virginia in company with several others during the night of the 4th inst., for the purpose of joining the rebels.

I am respectfully, Your Obd't Servt.,

T. S. PHELPS,
Lt. Comdg. U. S. Navy.

Prof. A. D. BACHE,
Supd't U. C. Coast Survey.

[Resolution passed by the commission appointed to examine sites for a navy yard.]

NAVY YARD, *Philadelphia, October 23, 1862.*

SIR: I have the honor to transmit to you a copy of a resolution passed by the board [1] on League island navy yard, etc., at their meeting of this day.

Very respectfully, your obedient servant,

S. H. STRINGHAM,
Pres't of the Board.

Prof A. D. BACHE, *Sup't U. S. Coast Survey.*

Whereas very important services have been rendered this board by the officers attached to the Coast Survey, in furnishing maps, charts, and other valuable information in reference to the various qualities of the localities which have been examined, thereby greatly reducing the labors of the board, and expediting the completion of its work, it is due to those gentlemen that the board should express its high appreciation of the great value of the assistance which has been so cheerfully and promptly rendered: Therefore—

Resolved, That the thanks of this board be tendered to Professor Bache, and through him to the gentlemen connected with the Coast Survey, for the very valuable assistance which they have so kindly, promptly, and cheerfully rendered in furnishing maps, charts, and other hydrographical and topographical information, whereby the labors of this board have been materially reduced, and the accomplishment of the object of its mission greatly facilitated.

U. S. MISSISSIPPI SQUADRON, *January 5th, 1863.*

SIR:

* * * * * * *

Mr. Strausz and Mr. Fendall, [of the Coast Survey,] have rendered themselves extremely useful to me in compiling maps for the use of the Army and Navy, and making surveys of the field of operations before Vicksburg. I sent Mr. Strausz down in a vessel near the front of the city to make plans and take sketches of the batteries, which he did to my satisfaction, giving us information that we have not possessed before, and showing the impracticability of attacking Vicksburg by water alone. We might otherwise have run our heads against a stone wall. During the ascent of the Yazoo river, and while engaged in taking up torpedoes, our passage was contested at every step by two or three thousand riflemen in pits and behind levees, so protected that our guns could not hurt them. The vessels were much cut up, the rifle balls going through and through the light upper works. Mr. Strausz accompanied the expedition, and while under the fire produced a good chart of the river and back country, with which we have made our advances. I could not have got along very well without these maps. Both Strausz and Fendall are very assiduous in making maps for future use. They are now making one of the State of Arkansas, where we intend striking a blow before returning to Vicksburg, the water being still too low to operate there with any hope of success. It is all swamp now, except in front. When the water rises our vessels can get near to dry land, where they can cover the troops.

I am, very respectfully, your most obedient servant,

DAVID D. PORTER.

A. B. BACHE,
Superintendent Coast Survey.

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[1] Admiral S. H. Stringham, president; Commodore G. J. Van Brunt; Commodore W. H. Gardner; Captain John Marston, U. S. N.; Professor A. D. Bache, Superintendent U. S. Coast Survey; Civil Engineer W. P. S. Sanger.

HEADQUARTERS 18TH ARMY CORPS,
STEAMER "JOHN FARON,"
Hilton Head Bay, Feb. 9, 1863.

CHAS. O. BOUTELLE, Esq.,
Assistant U. S. Coast Survey.

SIR: I am desired by Gen. Foster to tender you his thanks for your prompt action in rescuing the steamer *Pilot Boy*, which was obliged to be left anchored at sea, owing to a defect in her boilers that entirely disabled her.

Your thoughtfulness in towing the steamer into this port undoubtedly saved to the Government one of our most valuable light draft transports.

I am, sir, Your obedient servant,

JOHN F. ANDERSON,
Major and A. A. Gen.

U. S. NAVAL OBSERVATORY,
Washington, February 10, 1863.

SIR: In compliance with the instructions from the Bureau, dated the 2nd inst., I have the honor to transmit a statement showing, opposite to its name, the numbers of each U. S. Coast Survey chart, and the aggregate numbers of said charts, received from the Superintendent of the Coast Survey for distribution to vessels of the Navy, since 20th April, 1861.

And beg to be permitted to express the greatest obligation of this office to Prof. A. D. Bache for the promptness and cordiality with which he has met all the extraordinary demands for information absolutely indispensable to the blockading squadrons.

Very respectfully, Your obedient servant,

J. M. GILLISS,
Capt. U. S. N. Supt.

Commodore CHARLES H. DAVIS,
Chief of Bureau of Navigation,
Navy Department.

FLAG SHIP "WABASH,"
PORT ROYAL HARBOR, S. C.
February 10, 1863.

SIR: I have to acknowledge the receipt of your communication of the 31st ult., reporting your operations in pursuance of my orders of the 24th ulto.

Your examination of the channels and water on the Charleston Bar seems to have been conducted with great skill and boldness, and I beg you to receive my thanks and commendation for the same, and for the important information obtained.

Respectfully, Your obedient servant,

S. F. DU PONT,
Rear Admiral Commanding S. Atlan. Blockading Squadron.

C. O. BOUTELLE, Esq.,
Ass't. U. S. Coast Survey,
Com'g. U. S. S. "Bibb," Port Royal.

NAVY DEPARTMENT, BUREAU OF NAVIGATION,
February 21, 1863.

SIR: In compliance with the request of the Secretary of the Treasury, under date of the 29th ultimo, that he might be furnished with an account of the number of charts of the Coast Survey Office which have been distributed since the war began from the Bureau of Navigation or from the Observatory, and, also with the judgment of the Department as to the value of such charts, and of the personal services rendered by the Coast Survey Officers in the blockades and naval expeditions of the war, I have the honor to report:

That the whole number of Coast Survey charts distributed by the Bureau of Navigation to vessels of the Navy between April 20th, 1861, and February 10th, 1863, is 38,595, besides 105 memoirs on the coast of the United States, containing 909 charts; 50 reports; containing 1,500 charts, sketches, &c.; 180 tide-tables, and 12 notices to mariners. See statement and letter of the Superintendent of the Naval Observatory, accompanying this report.

And, in reference to the second part of this inquiry, I am gratified to have it in my power to express, as the result of personal observation and experience, my profound conviction of the great value of the Coast Survey charts to the operations of the Navy during the present war, as also my high estimate of the personal services of the officers of the Coast Survey who have been detailed for duty in the blockades and naval expeditions of the war.

I am, very respectfully, Your obd't serv't,

CHAS. H. DAVIS,
Chief of the Bureau.

Hon. GIDEON WELLES,
Secretary of the Navy.

NEW YORK, *March 24, 1863.*

SIR: I have had the honor to receive your communication of the 19th, with copies of letters transmitted by the Hon. Secretary of the Navy, from the Chief of the Bureau of Navigation, and Superintendent of the Naval Observatory, in acknowledgement of the assistance rendered to those important branches of the government service, by the Coast Survey organization.

The approval of men so well qualified to judge at any time of the usefulness and effectiveness of our efforts and more especially their commendation after a period which has severely tested the flexibility of the organization of the survey, are personally gratifying. I would respectfully refer their remarks as a subject of congratulation, to the Head of the Department, under whose direction the Survey is carried on.

Very respectfully, yours,

A. D. BACHE,
Superintendent, U. S. Coast Survey.

Hon. S. P. CHASE,
Secretary of the Treasury.

NEWBERN, N. C., *June 1, 1863.*

Prof. A. D. BACHE,
Supt. U. S. Coast Survey, Washington, D. C.

MY DEAR SIR: Mr. Fairfield has just given me a copy of his Triangulation Work on the Neuse river, which puts me in mind to thank you for the assistance which you have rendered me in sending him, Mr. West, and Mr. Rockwell, here. Their labors have aided very much in obtaining a correct knowledge of the country for military purposes.

Mr. West's work, from Newport Barracks to Morehead City, has been especially valuable. Hardly less so is the mapped reconnoisance of Mr. Rockwell on the north side of the Neuse. Mr. Rockwell's work about Little Washington, and on the route from Newbern to that place, was excellent and of great military value.

Thanking you again for the military aid that you have been able to give this Department,

I remain, with respect and kindest regards, Ever truly yours,

J. G. FOSTER,
Maj. Gen'l Com'dg.

U. S. ENGINEER OFFICE,
Rockland, Maine, July 18, 1863.

Brig. Gen'l JOSEPH G. TOTTEN,
Chief Engineer U. S. A., Washington, D. C.

GENERAL: I feel it incumbent on me to report that my reconnoisance of the shores of this harbor, on the 15th instant, for the purpose of selecting sites for batteries, was very much expedited and assisted through the courtesy of Mr. W. S. Edwards, of the U. S. Coat Survey schooner *Arago*, who kindly accompanied me, and furnished me with a manuscript map.

There can be no doubt that such co-operation between different branches of the Government service tends to the best interests of the country a large.

I am, General, very respectfully, Your obd't serv't,

THOS. LINCOLN CASEY,
Corps Engineers.

ENGINEER DEPARTMENT,
Washington, D. C. 24th July, 1863.

Prof A. D. BACHE,
Supt. U. S. Coast Survey.

SIR: I have the honor to enclose herewith a copy of a letter just received from Capt. T. L. Casey, Corps of Engineers, expressing his indebtedness to Assistant W. S. Edwards, of the Coast Survey, for valuable assistance rendered him in making an examination of Rockland Harbor, Maine, with a view to its defense, and I desire to add my thanks to this acknowledgment of Capt. Casey's for the aid to our operations thus received.

Very respectfully, Your obd't serv't,

J. G. TOTTEN,
Brig. Gen'l, Chief Engineer.

HEADQUARTERS DEPT. OF THE SOUTH,
IN THE FIELD, ENGINEER'S OFFICE,
Morris Island, S. C., August 5, 1863.

To the Assistant in Charge
U. S. COAST SURVEY,
Washington, D. C.

SIR: The maps of Charleston Harbor came duly, and have been of the greatest service to us.

Your charts of this coast are invaluable to us. Their great amount of detail and extreme accuracy leave nothing to be desired in a military map. * * * Little high-tide marsh streams and hummocks no larger than a tent floor, which apparently could never possess the least interest or value on a map, have proven to be important land marks and lines of communication for scouts and pickets. * * *

Very respectfully, Your obt. serv't,

T. B. BROOKS,
Capt. Vol. Engineers, A. D. C.,
And Ass't Engineer.

U. S. MISSISSIPPI SQUADRON,
FLAG-SHIP "BLACK HAWK,"
Off New Orleans, August 5, 1863.

DEAR SIR: * * * I cannot speak too highly of the interest shown by the gentlemen of the Coast Survey, Messrs. Fendall and Strausz, in the difficult works in which they were engaged; and I feel much indebted to them for the willingness and ability manifested in any service required of them.

I regret exceedingly that Mr. Fendall was disabled by sickness while employed on the survey of Vicksburg and its vicinity. He succeeded, however, in finishing all except the approaches dug by our army, which, as remarkable specimens of energy, bravery, skill, and endurance, should accompany the map. * * * With many thanks to yourself for allowing me the use of your assistants, and hoping that you will always permit me to call on you for hydrographic assistants, I remain,

Very truly and respectfully, Yours, &c.,

DAVID D. PORTER,
Rear Admiral.

A. D. BACHE, Esq.,
Supt. Coast Survey, Washington, D. C.

DEPARTMENT OF STATE.
Washington, August 8, 1863.

Prof. A. D. BACHE,
Supt. U. S. Coast Survey.

SIR: In the early part of the rebellion the Department found it convenient and useful to transmit to the Diplomatic and Consular Officers of the United States at the principal places in foreign countries, a map showing the progress of the Union armies in crushing the rebellion. During the present month

a review of the operations of the war, on sea and land, has been prepared and sent to many of our agents abroad. A few only of the maps prepared, as it is believed, at your office, which were intended to accompany it, were received in time to be transmitted with this review.

The public interest would be promoted if the Department could receive from your office three hundred additional copies of the map above mentioned.

I am, sir, Your obedient servant,

F. W. SEWARD,
Acting Secretary.

U. S. ENGINEER'S OFFICE,
Portland, Maine, September 1, 1863.

Brig. Gen'l JOS. G. TOTTEN,
Chief Engineer U. S. A.,
Washington, D. C.

GENERAL: I have the honor at this time and through the Department to return my thanks to the U. S. Coast Survey for the assistance and kindly co-operation given me by Assistants S. C. McCorkle and G. A. Fairfield, and by Sub-Assistant W. H. Dennis, and their efficient aids, during the past two months, in the establishment of temporary batteries for the defense of Belfast and Eastport, Me. Their instrumental observations and the maps furnished by them, were of great value in furthering the wishes of the Government for the establishment of field works at these places.

I am, General, Very respectfully, Your obedient servant,

THOS. LINCOLN CASEY,
Capt. of Engineers,

ENGINEER DEPARTMENT,
Washington, D. C., September 4, 1863.

Prof. A. D. BACHE,
Supt. U. S. Coast Survey.

SIR: I take pleasure in sending you the copy of a letter from Capt. T. L. Casey, Corps of Engineers, in which he returns his thanks for the valuable services rendered by certain officers of the Coast Survey in aiding him in the prosecution of his labor in erecting temporary batteries for the defenses of Belfast and Eastport, Me.

The Department takes leave on this occasion to renew the sentiment recently expressed to you by the Chief Engineer, in acknowledgment of similar important aid to engineering operations derived from the resources of the Coast Survey.

Very respectfully, Your obt. serv't,

J. C. WOODRUFF,
Major Engineers, In Charge.

FORTRESS MONROE, VA., *Nov. 6, 1863.*

DEAR SIR: In leaving this Department, I beg leave to express to you my warm thanks for your kindness in detailing officers of the Coast Survey, at various times, to act as topographical officers on my staff. Their services in making military surveys have been very valuable, and fully show the advantage to the Government of having this trained corps of scientific gentlemen in time of peace to be used in the survey of the coast, and in time of war in military surveys and reconnoisances.

Again be pleased to accept my thanks, and believe me,

Yours, most truly,

J. G. FOSTER,
Maj. Gen'l.

Prof. A. D. BACHE,
Supt. U. S. Coast Survey,
Washington, D. C.

HEADQUARTERS DEPARTMENT OF THE CUMBERLAND,
CHATTANOOGA, *November 22, 1863.*

Prof. A. D. BACHE,
Supt. U. S. Coast Survey,
Washington, D. C.

DEAR SIR: Permit me to thank you most cordially for your kindness in placing under the direction of Brig. Gen'l W. F. Smith, Chief Engineer Department of the Cumberland, Messrs. P. C. F. West, Clarence Fendall, F. W. Dorr, and J. W. Donn, officers of the Coast Survey service. In the short time they have been on duty at these Headquarters they have rendered most valuable service in reconnoitering, surveying and mapping the country.

Would it not be a legitimate branch of the duties of the Coast Survey to have the important rivers running through the country occupied by our armies accurately surveyed? As lines of communication and supply it would be very important to possess information concerning their adaptability to navigation at all seasons of the year.

I shall desire to retain these officers, with General Smith, as long as you can spare their services.

Very respectfully, Your obd't serv't,

GEO. H. THOMAS,
Major Gen'l U. S. V. Com'dg.

FLAG STEAMER "PHILADELPHIA,"
OFF MORRIS ISLAND,
November 23, 1863.

Mr. J. E. HILGARD,
Assistant in charge,
U. S. Coast Survey office.

DEAR SIR: I have received the copies of "Charleston Harbor with positions of Batteries, Vessels &c.," and to-day the colored charts of the Harbor.

For this, as well as for previous plans, &c., please accept my thanks.

And be so good as to assure Prof. Bache of my earnest appreciation of the value of the noble work over which he presides, and which he has rendered an honor to the country.

Very respectfully, Your obd't serv't,

J. A. DAHLGREN,
Rear Admiral Com'dg,
S. Atl. Blockading Squadron.

HEADQUARTERS ARMY AND DISTRICT OF NORTH CAROLINA,
NEWBERN, N. C., *Nov. 30, 1863.*

A. D. BACHE, LL. D.,
Supt. U. S. Coast Survey,
Washington, D. C.

DEAR SIR: I have the honor to acknowledge the receipt of several valuable maps and a memoir relating to the coast of North Carolina. In the valuable memoir I found reliable information touching the character of the sounds between New Inlet and New River Inlet, not to be had elsewhere. For these and former contributions from your ably administered department please accept my thanks.

Very respectfully, Your obd't serv't,

JOHN PECK,
Maj. General.

COAST SURVEY OFFICE, *January 4, 1864.*

SIR: I have had the honor to receive your letter of December 31st. ult., transmitting a copy of a despatch addressed to the Hon. Secretary of the Navy by Rear Admiral D. D. Porter, in which acknowledgement is made of the services rendered to the Mississippi Squadron by Coast Survey Officers who were detailed for duty under the Admiral's command. It gives the great satisfaction to add this to the numerous testimonials of our military and naval commanders in regard to the efficiency of the Survey and its adaption to the present requirements of the army and navy.

Very respectfully, Yours,

A. D. BACHE,
Superintendent.

Hon. S. P. CHASE,
Secretary of the Treasury.

U. S. Steamer "Curlew,"
Grand Gulf, Miss., March 16, 1864.

Dear Sir: I have the honor to enclose a rough sketch of the tertiary triangulation between Mound City and Cairo on the lower Ohio River, showing also the manner in which the projection has been made. The dotted triangle lines are not fully established and require some few more observations. The Topography is finished from the northern extremity to the south base and likewise the opposite Kentucky shore, leaving the city of Cairo not commenced yet. When I take up the work again I shall run the shore line all around that place, and then reduce the city blocks from a map which has been kindly furnished me by the Illinois Central Rail Road Company.

The triangles were observed by one set of repetitions d. & r. and all the angles closed agreed very well; observations were made by myself and by Mr. Bowie. Topography was made by Mr. Fendall and Mr. Bowie, and computing and plotting by myself.

Up and down lines for the soundings I think not advisable on account of the heavy current, but I intend to run the lines parallel about in 45° over the river, and cross them rectangular, taking care that all are run slanting "up stream" at a distance of not more than 250 or 300 meters apart from each other.

Very respectfully, Your most obedient servant,

F. H. Gerdes, *A., C. S.*

Prof. A. D. Bache,
Supt. U. S. Coast Survey.

U. S. Coast Survey Office,
April 6, 1864.

Dear Sir: If you have time, will you look over Mr. Gerdes's journal and descriptions, and return to me. They show the operations with Admiral Porter, and I should be glad if the Secretary had a few minutes to look at them if he would do so. The sketches will bear directly on the selection of a navy yard and the operations have been ordered by Admiral Porter, accordingly.

Yours respectfully and truly,

A. D. Bache,
Superintendent.

George Harrington, Esq.,
Assistant Secretary of the Treasury.

Coast Survey Office, *May 19, 1864.*

Sir: Assistant Edward Goodfellow being desirous of fitting himself for the command of colored troops in the field, has on his application at Philadelphia been admitted to the Free Military School established there for instruction, and wishes to tender his resignation as an Assistant on the Coast Survey to take effect on the 3rd of May instant.

I would respectfully request authority to accept the resignation thus tendered by Assistant Goodfellow.

Very respectfully, Yours,

A. D. Bache,
Superintendent.

Hon. S. P. Chase,
Secretary of the Treasury.

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927 Clinton St., Philadelphia,
September 14, 1864.

Dear Sir: My friend Mr. Dean has I believe already informed you of the severe attack of illness which followed my attempt to undertake the duties of an army officer, and of my wish to return if possible to my former position.

I should be very glad, if it meets your views, to be reinstated in a service to which I have been so long attached, and for which my usefulness is I hope not impaired.

My resignation of my captaincy in the colored Troops having been accepted by the War Department, I am the more anxious, as I gain strength

from day to day, to serve once more to the best of my ability in the Coast Survey.

Very respectfully and Truly, Yours,

EDWARD GOODFELLOW.

Prof. A. D. BACHE,
Superintendent U. S. Coast Survey.

U. S. COAST SURVEY OFFICE,
Washington, Oct. 12, 1864.

SIR: With reference to the application of Messrs. Selden and Ruggles for the temporary transfer of a Coast Survey vessel to the Navy Department referred to this Office by you, I have the honor to report, under direction from the Superintendent, that the brig *Fauntleroy*, now at San Francisco, can be spared for the purpose stated, without detriment to the public service.

Very respectfully,

J. E. HILGARD,
Assistant in Charge of Office.

Hon. W. P. FESSENDEN,
Secretary of the Treasury.

CAMBRIDGE, MASS., *October 15, 1864.*

SIR: I have the honor to request your approval of the application of Edward Goodfellow, late an Assistant in the U. S. Coast Survey for re-appointment to his former position; such appointment to take effect from the first of November, proximo.

Very respectfully, Your Obedt. Servt.,

A. D. BACHE,
Supdt. U. S. Coast Survey.

Hon. W. P. FESSENDEN,
Secretary of the Treasury.

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Military and naval service of the United States Coast Survey 1861-1865

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